

ETHERTON

Economic Farmhouses
and their Architectural Problems

Architecture

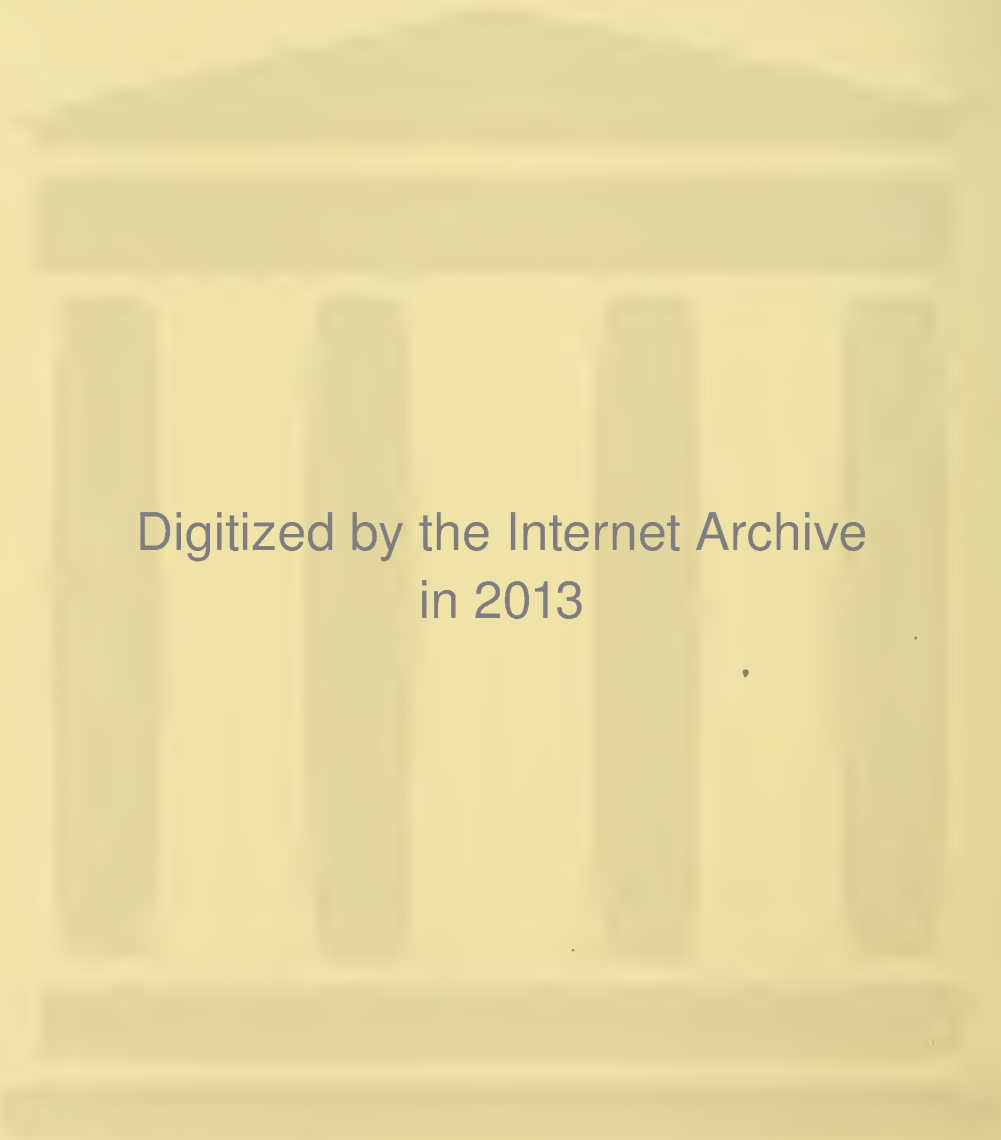
M. A.

1914

THE UNIVERSITY
OF ILLINOIS
LIBRARY

1914
Et3





Digitized by the Internet Archive
in 2013

<http://archive.org/details/economicfarmhous00ethe>

ECONOMIC FARMHOUSES AND
THEIR ARCHITECTURAL PROBLEMS

BY

WILLIAM ALONZO ETHERTON
B. S. University of Illinois, 1904

THESIS

Submitted in Partial Fulfillment of the Requirements for the

Degree of

MASTER OF ARCHITECTURE

IN ARCHITECTURE

IN

THE GRADUATE SCHOOL

OF THE

UNIVERSITY OF ILLINOIS

1914 *in*

1914
Et3

UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

May 6th 1914

I HEREBY RECOMMEND THAT THE THESIS PREPARED BY

William Alonzo Etherton

ENTITLED

ECONOMIC FARMHOUSES AND THEIR ARCHITECTURAL PROBLEMS

BE ACCEPTED AS FULFILLING THIS PART ON THE REQUIREMENTS FOR THE

PROFESSIONAL DEGREE OF Master of Architecture.

L. H. Province

Acting Head of Department of Architecture

Recommendation concurred in :

L. H. Province

Ira O. Baker

James M. White

Committee

CONTENTS

PART 1.

CHAPTER 1.

	Page
THE FARMHOUSE A PROBLEM OF FARM ECONOMICS:	1
Influence of house on efficiency of farm labor.	

CHAPTER 11.

THE FARMHOUSE NEGLECTED:	2
The house has not shared in the improvements of the farm. - Our ancestors better provided for. - Early colonial farmhouses the best examples of American architecture. - Old farmhouses out-of-date.	

CHAPTER 111.

WHY NEW FARMHOUSES FAIL:	6
The economic value of the house not understood. - The house not subject to commercial competition. - Lack of attention by public institutions to farmhouse problems.	

CHAPTER 1V.

ECONOMIC ASPECT OF THE FARMHOUSE PROBLEM:	9
Modern economic conditions tend to supplant the inefficient farmers with skilful and intelligent men. - Other industries recognize the economic importance of the better housing of labor. - Its importance to agriculture. - The dairy barn improved because its economic value is in evidence. The house more important than out-buildings. - Possible saving in first cost of buildings.	

CHAPTER V.

UNECONOMIC FARMHOUSES DUE TO A LACK OF EXPERT ASSISTANCE:	13
Farmhouses not planned by architects. - Family help essential but not sufficient in planning the house. - Examples of owners' attempts at planning. - A problem for public institutions. - General and not individual aid to be given farmers. - Plans for small houses may be made for general use.	

CHAPTER VI.

THE SOCIAL ASPECT OF THE FARMHOUSE PROBLEM:	20
The social importance of the house greater than its economic importance.	

CHAPTER VII.

THE CIVIC ASPECT OF THE FARMHOUSE PROBLEM:	Page 23
The relation of housing to citizenship.	

CHAPTER VIII.

A PRACTICAL SOLUTION OF THE FARMHOUSE PROBLEM:	23
General discussions of farmhouse problems and newspaper publicity helpful but not sufficient. - The farmhouse must be handled scientifically like other agricultural problems.	

CHAPTER IX.

COST:	24
Cost a fundamental factor. - What should the farmhouse cost? Tables of present values. - The farm income and cost of house. - Amount of income represented by the food products from the farm. - The city wage earners' incomes. - The costs of housing in country and city compared. - An equality of housing costs in country and city necessary to a back-to-the-farm movement. - Necessary increase per acre of cost of farmhouses to equal cost of city houses.	

PART II.

ARCHITECTURAL PROBLEMS OF THE FARMHOUSE.	37
--	----

CHAPTER I.

PERMANENT CONSTRUCTION:	38
Destruction of Buildings by Lightning: -	
Farm buildings in greater danger of lightning stroke than city buildings. - Lightning Rods. -	
Buildings with metallic roofs.	
Destruction of Buildings by Fire: -	39
City building ordinances. - Greater fire hazard in congested farm buildings. - The New England connected type of buildings. - Insurance Rates.	
Barn to be on leeward side of house. - Fires originating within the house. Faulty flue construction. - Stove pipe extended into bedroom above. -	
Lack of fire protection at hot air furnaces. -	
Lack of fire stops. - Need of building ordinances for farmhouses.	
Destruction of Buildings by Wind: -.	43
Popular belief in irresistibility of the wind. -	
Examples of wind-resisting buildings. - Examples of non-resisting building construction. - Structural requirements for wind resistance.	

Permanency of Wooden Buildings:	Page 45
Examples of old frame houses. - A mistake to spend money in putting up farm buildings too substantially.	

CHAPTER 11.

UTILITY:	48
The house a shelter against heat and cold, wind, rain, hail, snow, and lightning; a protection from outside foes. - It should provide for cleanliness, for privacy, for convenience, and for social life in the home.	
Protection from Heat:	48
Rooms on shady and windward side of house. - Location of kitchen. - Living rooms protected from heat by clothes closets, store rooms, stair halls, porches, trees, window shutters, insulated walls, wide cornices. - The half-story uninhabitable in hot climates during the summer months. - Value of full stories and ventilated attics. - Heat generated in the house. - Windows near ceilings. - Metal hood over kitchen stove. - "Ventilated kitchen fireplaces." - The detached kitchen. - The semi-detached kitchen.	
Protection from Cold:	67
Orientation of rooms. - Living rooms protected from cold by clothes closets, store rooms, stair halls, to the north and west, and the use of wind-breaks, window shutters and insulated walls. Wind-breaks, storm sash, reduced window area, solid foundations. - Heating systems.	
Protection from Rain, Hail and Sun:	70
Roofs, cornices, drop canvas porch curtains, damp proof courses. - Dry cellars.	
Protection Against Outside Foes:	73
Flies, mosquitoes, cats, and dogs.	
Provisions For Sanitation:	74
Building site. - Good surface and sub-surface drainage, water, light, sunshine, air, cleanliness, protection from weather and from insects. - Simple details, and reduced floor, wall and ceiling surfaces an aid to cleanliness. - Light and ventilation, windows, fire grates, hot-air heating system, vent flues, sleeping porches. - Plumbing. Fly screens.	
Provisions for Convenience:	78
The kitchen in the suburban home. - Family life in the suburban home. - The farmhouse a workshop. The kitchen more important in the farmhouse. - Household duties, meals, clothing, care of the house, care of the person.	

Convenience in Duties Appertaining to Meals: Fuel, water, foodstuffs, and equipment to be near to the places where needed.

Fuel: - Examples of inconvenient handling of fuel, gas and electricity for cooking. - Ashes. - Water: pneumatic water supply; location of cistern or well; pitcher pumps at sink; hot water reservoir on stove. - Storage of foodstuffs and the arrangement of kitchen equipment; refrigerator, china closets, butler's pantry, sink, work table, stove. - Dining porch.

Convenience in Duties Appertaining to Clothing: Sewing room. - Laundry. - Hats and Coats. - Clothes closets. - Built-in dressers. - Hinged window seats and boxes.

Convenience for House Cleaning: - Small houses easier to clean. - Stairs. - Halls. - Outside entrance to dining room. - Vacuum Cleaner.

Conveniences for Bodily Cleanliness: - Bathing facilities. - Lavatories.

PROVISIONS FOR SOCIAL LIFE IN THE HOME. 86

An example of the absence of social life. - Possibilities for social life in inexpensive houses. - The lawn a valuable aid to social comfort. - The parlor. - The porch. - The front door.

THE ILLUSTRATIONS

Suburban house at Chevy Chase, Md., showing design suitable for farmhouse	Frontispiece
An example of a typical farmhouse, University Farm, Madison Wis.	page 1
A two-room tenant house on an Oklahoma farm near Stillwater, Okla.—narrow corners, no porch, no shade; sun was shining through the two west windows of both rooms, to the opposite wall when this photograph was made. Note two outside doors, where one would have been better.	2
A colonial farmhouse near Woodsville, N. H.	3
A connected farmstead near Gorham, Me.	3
Old colonial farmhouse and new barns near North Haverhill, N. H.	4
One of the earliest log houses in Jackson County, Illinois. The large stone chimney and fireplaces removed, and rear porch and ends of building weatherboarded.	5
An exceptionally neat appearing house and lawn near Ebenezer, N.Y.	11
Screened sitting porch of house in Stillwater, Okla., designed by writer.	11
An ill attempt to build beautifully; an expensive and poorly planned farmhouse near Janesville, Wis.	12
An uneconomic farmhouse near Stillwater, Okla.	12
A woman's plan of a farmhouse.	14
Another house costly planned and designed, because of numerous angles in walls and roof.	16
An example of a typical negro cabin on a plantation near Monroe, La.	16
A poorly planned and designed farmhouse near York, Pa.	13
A cheap tenant house in Southern Illinois.	18
An owner's farmhouse near Oklahoma City, Okla., note the absence of porches and lack of protection from sun, rain and wind.	18
A neat little cottage and surroundings on Sheben Road, near Burlington, Vt.	19
A farmhouse near Monroe, La., designed by an architect and built by a Canadian.	20
A tenant house near Ripley, Okla.	21
A suburban house in Chevy Chase, Md., with design suitable for farmhouse.	22
A farm tenant house	17

THE ILLUSTRATIONS

	Page
A closely grouped farmstead at South Newbury, Vt.	39
A connected buildings, Woodsville, N. H.	40
An example of faulty flue construction, near Lancaster, Pa.	41
An example of good brick work on a farm- house near Lancaster, Pa.	41
A colonial farmhouse near Concord, Mass. Too large for modern needs.	45
An old farmhouse at South Windsor, Conn., an ex- ample of the Dutch Colonial house.	45
An old house at Miller's Place, Long Island, fired upon by the British in the American Revolution.	46
A house at Mt. Sinai, Long Island, reputed to be 200 years old.	46
An example of a very old colonial farmhouse at Gorham, Me., with new barn.	47
An Oklahoma farmhouse with kitchen on west. Note long windows on south, with no protection from sun, rain and wind. The window on right has fixed sash. . . .	48
An exterior view of 2 houses at Stillwater, Okla., designed by writer. Note the low shade lines of the 3 and 4- foot cornices and the casement windows in upper story.	50
Story-and-half house near Stillwater, Okla. Second-floor rooms uninhabitable in hot weather.	50
Another example as described in Print 32, page 50.	51
A full two-story house with ventilated attic, casement windows, and screened porches.	51
Louisiana farmhouse with detached kitchen, This print is reversed. See Print 18, page 20.	52
Six-room tenant house at Cora, Ill. Note open foundation and exposure of inmates to cold.	68
Home of writer at Stillwater, Okla. Note sleeping porch which is used winter and summer.	70
Brick tenant house near York, Pa, damp walls and musty atmos- phere; sickness within.	71
Tenant house near Stillwater, Wis. Note screened porch which is more prevalent in the North than in the South.	73
A row of real-estate houses in Kansas City, Note sleeping porches on all.	76
A new farmhouse near Janesville, Wis. The front door is seldom used.	79
An old colonial farmhouse in New York.	79
A Pennsylvania farmhouse, All coal is carried from the barn. . .	78
The winter wood.	80
The house in which the wood shown in Print 44 is to be stored, near Saco, Me.	80
Detail of ash pipe from cook-stove.	81
Six room two story brick	86

ILLUSTRATIONS.

Plans

	Page
Plan No. 1. An inexpensive farm tenant house.	17
Plan No. 2. Large kitchen and dining-room in a new Pennsylvania farmhouse.	53
Plan No. 4. Same as Plan No. 1	56
Plan No. 5. First enlargement of Plan No. 4.	57
Plan No. 6. Second enlargement of Plan No. 4.	58
Plans Nos. 7 and 8. Third enlargement of Plan No. 4.	59-60
Plan No. 9. Perspective of Plans No. 7 and 8	61
Plan No. 10. First-floor plan of 7-room house with southern or western exposure for all rooms.	62
Plan No. 11. Second-floor plan of Plan No. 10.	63
Plan No. 12. First-floor plan of a small colonial farmhouse.	64
Plan No. 13. Second-floor plan of Plan No. 12.	65
Plan No. 14. Basement plan of Plan No. 12.	66

TABLES.

Tables Nos. 1, 2, 3, 4. The relation of the farmers' income to amount invested in farm buildings, in Iowa, Illinois, Michigan and Indiana.	25-26
Table No. 5 Value of food products consumed on the farm.	27
Table No. 6 Cost of housing to city wage earner.	29
Tables Nos. 8, 9, 10, 11. Increase per acre in cost of farmhouses necessary to equal costs of housing city wage earners, in Iowa, Illinois, Michigan, and Indiana.	32
Table No. 12. Comparative costs of building and building materials.	35

FOREWORD.

Humanity is fed and nurtured upon the products of the soil, and it is becoming more and more concerned about its disinclination to engage in agriculture. It has asked the question "Why this disinclination?" and, in attempting an answer, it has pointed out the social and educational disadvantages of country life. It has recognized the heavy burdens upon the women of the farm, and has emphasized their need of labor saving devices. It has failed, however, to consider and to comprehend the fundamental importance of the architectural problems of the farmhouse. These are at the threshold of success in an effort to better farmhouse conditions and, if this paper elucidates this one fact, it has proven its worth as an architectural thesis.

The paper is written in a popular style because it deals with a subject which can thus be most effectively handled. It approaches the subject from a dollar-and-cents' standpoint, and emphasizes, as a matter of policy, its importance as a problem of farm economics. Americans are in the thrall of commercialism, and are more susceptible to such argument than to one of aesthetics. This is true of the farmer, and architects have failed to assist him because they refuse to subject art to the artful devices seemingly necessary to persuade him. We can, however, hope to attain the beautiful only as incidental to efforts along broader lines.

In considering the architectural problems of the farmhouse, many are enumerated which are in no sense peculiar to this class of dwellings. They are included more for completeness than for special consideration.

The writer has chosen the farmhouse for this thesis, because it has become the subject for his life work. His boyhood experience in building and his early acquaintance with country life caused him to consider years ago the farmers' need of architectural assistance. This need was further impressed upon the writer's mind while he was a student at the University of Illinois, and assisting the Agricultural College with its architectural problems. A few years later, 1909, while a professor of Architectural Engineering in an Agricultural and Mechanical College in another state, he delivered his first addresses on "Better Farmhouses," and published his first article on the subject. He endeavored then to interest the president of the college in the matter, with the hope that a chair of Rural Architecture would be established for the instruction of agricultural students, and the assistance of farmers within the state. Having failed in this endeavor, the writer decided to interest, if possible, the U. S. Department of Agriculture in the work.

To his delight, he found that the Department was already interested in this subject and that it had, for sometime, been considering the employment of an architect to handle it. Professor W. J. Spillman, Agriculturist in charge of the Office of Farm Management, suggested in 1910 to the Spokesman-Review, of Spokane, Washington, that it have its readers submit competitive plans for farmhouses. In reviewing these plans, Professor Spillman became convinced of the farmer's helplessness in work of this kind and of the duty of public agencies to assist him.

The writer was employed as architect in charge of Farm Structures. He has, thus far, devoted his time to a study of farm-

house conditions with which he will have to deal. He has made investigations in twenty states. The photographs used to illustrate this paper were made by him, while thus engaged, not for artistic effects, or to show the best or the worst that may be found in rural architecture; but to record actual conditions as they were found.

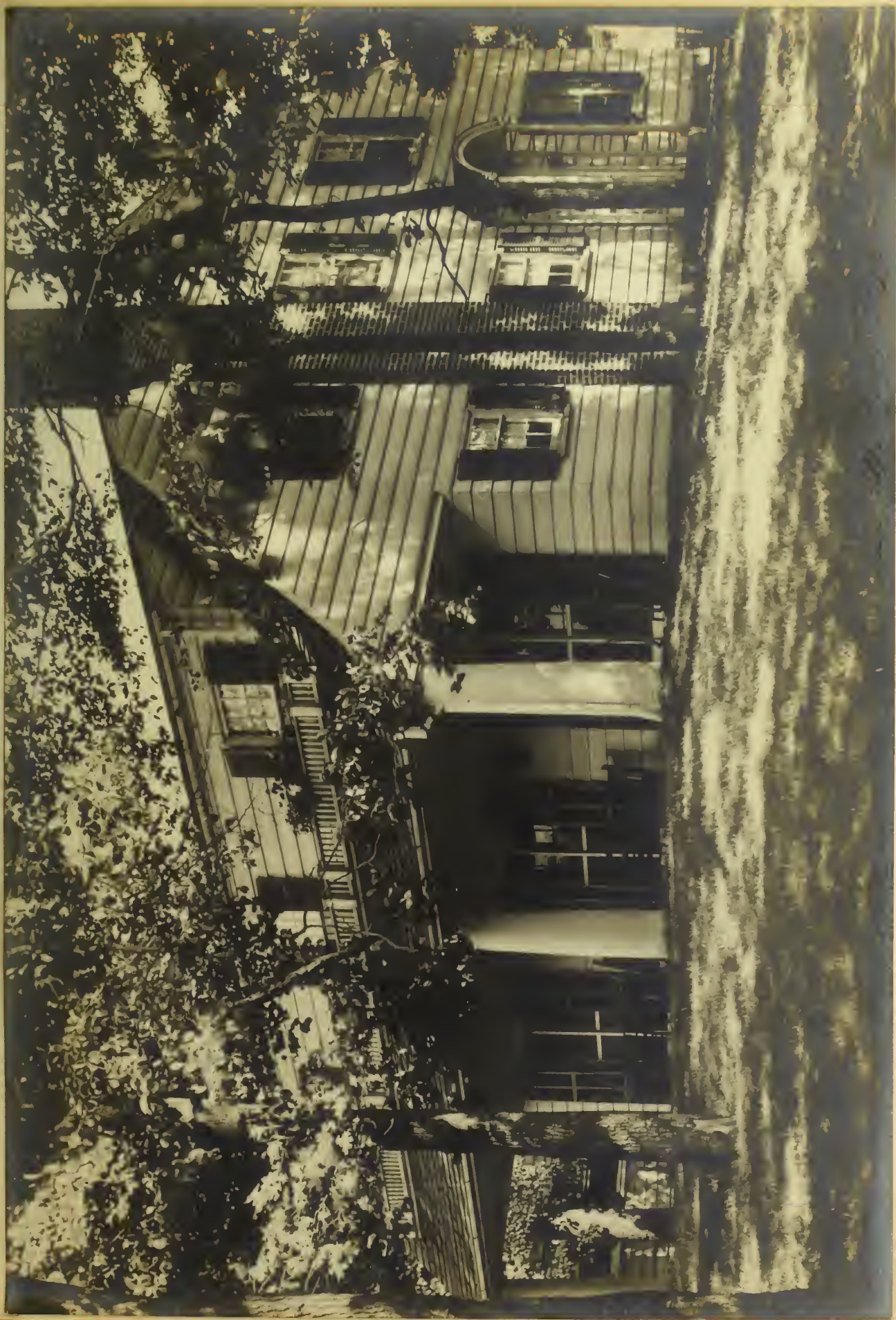
The writer is indebted to Prof. W. J. Spillman and to Mr. F. H. Thomson, of the Office of Farm Management, for favors received in the preparation of this paper.

(Signed)

W. A. Etherton, '04

Washington, D. C.

April 5, 1914.



The possibilities of rural architecture are not wholly within the imagination. Page 88

1

ECONOMIC FARMHOUSES AND THEIR
ARCHITECTURAL PROBLEMS.

--0--

PART ONE

THE ECONOMIC IMPORTANCE OF THE FARMHOUSE.

--0--

CHAPTER 1. THE FARMHOUSE A PROBLEM OF FARM ECONOMICS.

Farmhouse problems constitute one of the most important phases of farm economics. No other concerns more vitally the mental and physical fitness of the laborers for efficient service, whether the work is within the house or in the fields. They affect most, however, those for whom the house is a workshop by day as well as a shelter at night.



Print No. 1.

CHAPTER 11. THE FARMHOUSE NEGLECTED.

These problems are now of greater importance than ever before because of their complex relations to modern social, civic, and ethical conditions. The house has failed to share as it should in the improvements of the farm, and the average American farmhouse of today is a rebuke to our boasted civilization and our agricultural education.

Our ancestors were relatively better provided for. Their log cabins were planned for fireplace cooking and for other household duties peculiar to frontier life. Built from the largest trees of the forests and with stones from the creeks and the hillsides, these buildings withstood the foes of the woods and the storms of generations. They were, architecturally, in harmony with the trees, the hills, and the rocks about them.

When the frontier of our western civilization emerged from the woods on to the wind-swept plains, the conditions to be contended with there were greatly changed. Without the forests for material and for shelter from the wind and sun, the pioneer could not build as he had learned to do in the woods, or copy from a nearby town as is done today. He was thrown upon his own resources, and of necessity found upon the spot the material for his building. When his sod or adobe hut was done, he enjoyed an immunity from the hot sun and a protection from the winds that is impossible in the flimsy shacks now so common on the plains.



Print No. 2

RECEIVED
BY THE
LIBRARY OF THE
UNIVERSITY OF MICHIGAN

When the forests disappeared under the woodman's ax and the cultivated fields brought a competence to the Colonial farmers, the log houses gave way to others better adapted to the altered landscape and to the more settled industrial and social conditions of farm communities. Unhampered by precedents, the farmers built again with the materials at hand and as well as they knew for the needs of Colonial life. How well they knew and how well they designed and built is evidenced by the fact that many of these farmhouses are yet intact after more than a century's use and that they are admired by the Nation, as its best examples of domestic architecture.



Print No. 3.

Colonial architecture was the fortunate and happy result of a higher appreciation of the value of farmhouses than obtains today and of an intelligent effort to build such houses to serve every requirement of the home.



Print No. 4.

"Planned for the exact needs of the owners, they have no unnecessary features and typify in their good proportions and sturdy outline the character of the men and women who lived in them."



Print No. 5.

Agriculture has been revolutionized since Colonial days and country life greatly changed, but many of the farmhouses planned and built more than a hundred years ago when house servants were plentiful are still in use. The better examples are admired for their architectural beauty, but, because of a lack of modern improvements in plan and equipment, they fail to minister as of old to the needs of the family.

Many of the log houses in the Middle West which served their builders so well and seemed so much akin to the trees and the rocks about them, now appear lonely in their barren isolation on the roadside, and they serve inadequately the needs of the present owners. Some of these relics of older days have been concealed under a veneer of weatherboarding, their huge fireplaces have been boarded up and two or three rooms added in an attempt to modernize the old structures and to prolong their service. It would have been difficult, if not impossible, for an architect to have remodeled such houses successfully and the results obtained by the owners and the country carpenters are crude indeed. Certainly, the "hand-me-downs" of another age can not so well serve the present, and the

families now trying to fit themselves to such buildings find it more difficult than did previous generations.



Print No. 6.

CHAPTER 111. WHY NEW FARMHOUSES FAIL.

The inheritance of out-of-date buildings accounts for much of the inconvenience in and dissatisfaction with present-day farmhouses, but not with the wholly new ones. Why have the farmhouses built in our own generation failed to share as they should in the general improvements of the farm and to maintain the standard of former years?

We may find one of the answers to this question in the commercial spirit of our age, which is so rife among farmers and so dominant in our agricultural education. The improvements in farm implements are the products of inventive genius stimulated by such a spirit, and the better methods of farming are the results of scientific research and teaching, the ultimate aim of which is increased crop production and enhanced profits. If the influence of the house on the profit-and-loss account could have been better understood, the house would undoubtedly have shared more in the improvements of the farm, but it has not been considered a paying investment, and house work has not been regarded as having a productive value.

On the other hand, the field equipment has offered great inducements to the manufacturer for improvements, and he has continued year after year with the greatest skill and intelligence his millions could command to increase the efficiency of his products and to decrease the cost of their manufacture. These improvements have eliminated much of the drudgery of field work and have raised the servile toiler to the mastery of engines and implements which, at the pulling of levers, do the work formerly required of many hands. The farmer who once sweltered under a harvest sun and gathered the grain in handfuls from the fingers of the cradle may now ride on a spring seat and trip the bundle carrier with his

foot; but his wife, in many instances, continues as in former years to carry water from the distant well and slops from the kitchen door.

The servant who had no other responsibility than that of household work, and no other cares than those of her personal needs and desires, might have done the work allotted to her without great fatigue, but it was sufficiently irksome to drive her from the farm. The wife and perhaps a daughter have now, in the majority of homes, the burden of all the work; and when the wife is mother, nurse, and cook, and shares with her husband the cares of the farm, she is enslaved to farmhouse conditions which she cannot long endure. These conditions must be mitigated if the exodus from the farm is to be checked and the farm home is to attain to the high standard which modern agriculture demands.

If suitable houses could be manufactured and sold at a profit like agricultural implements, the farm home would soon become, with the help of its natural advantages, the best and the happiest in the world instead of one to be dreaded. Then the farmer would have profusely colored catalogs of houses in abundance with floor plans, sections, elevations, and perspectives that would soon persuade him of his negligence to his family and himself, and induce him to exert every effort necessary to improve his farm and his home life with one of these houses.

The salesman with larger catalogs and miniature cardboard houses would entertain the family in a most interesting manner and teach it things about rural architecture that it had never thought of before. He would point out serious defects in present home buildings and show how these mistakes were all overcome in his houses. With indisputable evidence, obtained by careful and extended observations, he would convince the family that the women are wasting

their energy in miles and miles of travel in and about the house and by tons upon tons of lifting that would be saved in a properly planned and equipped house, to say nothing of the dangerous exposure to weather which is unavoidable in so many of our present buildings. He would show how the same care and study that made the improved kitchen cabinet a much-to-be-desired article, if not a necessity in our homes, had been applied to the whole of the kitchen and of the house, and with a proportionate saving of space and labor throughout.

He would interest the men in the details of construction, and explain these just as he does today in selling harvesters, wagons, and automobiles. These explanations would educate the farmer in building work and create an interest in it just as they have done in farm implements. Manufacturers would vie with each other in evolving the most economical and perfect details of construction, and who can say that as a result of such competition we would not have houses of concrete, asbestos, gypsum, terra cotta, brick, etc., that would be more nearly fireproof, windproof, and verminproof than those now in use and at a cost very little in excess of what we so often pay for inflammable houses of wood.

But suitable houses adaptable to the varying needs of farmers living under different climatic, topographic, and industrial conditions can not be manufactured and sold at a profit like farm machinery, and we can not hope for such beneficial results from this source. This dream may, however, become a happy reality under the rightful management of the public institutions established to work out the farmers' scientific and technical problems. What is impracticable to the manufacturer as a problem of profit-and-loss may be practicable to the United States Department of Agriculture and to the agricultural colleges, and social and economic conditions seem now to demand their attention to this work.

CHAPTER IV. ECONOMIC ASPECT OF THE PROBLEM.

Until recently, the problem of agricultural production seemed of paramount importance and engrossed the attention of agricultural institutions, but no sooner did it become possible under scientific methods of farming to grow the proverbial two blades of grass than it became impracticable to do so because of the economic conditions affecting the marketing crops.

The farmer has now the convincing proof that his income is cut in two by the present system of getting his products to the consumer and that it is as essential to his success to avoid the exploitation of his earnings as it is of his soil. This is forcing him out of necessity for self protection to interest himself in economic problems wholly foreign to those of agricultural production, and the farmer who lacks the ability and the inclination to cope with the industrial conditions now forcing themselves upon him, however successful he may be in other phases of farming, will surely fail to reap the full reward of his labor.

These conditions are forcing the unskilled and inefficient either off the farm or to a beggarly existence and bringing to the farm the intelligence and the business ability essential to the successful management of other industries. Such farm management can not and does not regard the farmhouse and woman's work as unproductive of wealth, and it demands for tenants, as well as for the owner, houses that minister adequately to their social and industrial needs.

The management of other industrial concerns recognizes the economic value of labor-saving devices and of buildings that minister to the comfort and enjoyment of employees both at the factories and at the homes, and increasing

efforts are being made by managers to provide better houses for the workmen and to elevate their home life. One of the earliest and most gigantic efforts of this kind was undertaken by a firm of soap manufacturers at Port Sunlight, near Liverpool, England. The managers of this industry state that as a result of this enterprise --

"***** the output and the quality per man have risen considerably during the last twenty years..... If, little by little, similar schemes and minor improvements are everywhere introduced and react as favorably upon profits as they appear to have done at Port Sunlight, then there is hope for industrial England."

Many examples of the application of this principle of better houses for employees are now found in America, and there is no longer any question as to its economic value. It is as applicable, if not more so, to farming than to any other industry, and the increasing need of better farmhouses makes their attainment one of the most important of farm-management problems.

Buildings for the stock have had the careful attention of animal husbandrymen for a number of years and complete plans and specifications, bills of materials, and cost data for dairy barns of varying sizes are now furnished free to farmers by the Bureau of Animal Industry of the U. S. Department of Agriculture. These buildings have been carefully worked out with regard to hygienic conditions and economy both of construction and of the work within the barns.

The dairy barn is a purely utilitarian structure, subject only to a few principles of planning and design and but little influenced by the varying external conditions of different localities. Its economic value is clearly in evidence so it has shared generously in the improvement of the farm. Moreover, dairymen have been constrained by municipal regulations to build modern, sanitary barns that will conserve the health of the cows and the healthfulness of the milk.

The residence, on the other hand, is not, or at least is should not be a

purely utilitarian structure. It is subject to more principles of planning and design than any other building erected by man and to many of the external conditions that affect the health, comfort and habits of the family.



Print No. 7.

Its economic value is not clearly in evidence, but it is not difficult for the discerning mind to comprehend. It is the most important building on the farm, and money judiciously expended in its construction and equipment will inevitably bring greater returns than in any other improvement which the farmer can make. Health in the house is certainly as great an asset to the farmer as health in the dairy barn, and happiness and contentment in the family as essential to efficient service as improved tools and outbuildings.



Print No. 8

The possible saving in the first cost of buildings is in itself an item of such magnitude as to claim the attention of economists. To the uninformed, it may seem irrational to say that a \$3,000 house could be so planned and constructed as better to serve the farmer than the \$4,000 house which he recently built;



Print No. 9

but one acquainted with the actual facts would consider such a statement as wholly conservative. The author of the "Farmstead" stated that

"after having made a long and most careful study of them, I estimated that from thirty to forty per cent of the cost of farm buildings is useless and sometimes worse than thrown away."

If more conservative than the author, we estimate the amount at ten per cent, then there was wasted or worse than thrown away in farm buildings during the last decade, according to the Thirteenth Census, more than two hundred and fifty million dollars, or more than twenty-five million dollars annually, because of the improper planning and construction of buildings.



CHAPTER V. UNECONOMIC FARMHOUSES DUE TO A LACK OF EXPERT ASSISTANCE.

Architects probably plan less than one per cent of farmhouses, yet of all the problems of the farm, there is perhaps none for which the farmer is more in need of expert assistance. One of the profession writes in a current periodical:

"It is unfortunate for the farmer and the appearance of the country-side that trained architects may not assist him in his building enterprises. The state experiment stations could do the farmers no greater service than by establishing a bureau of buildings. A trained architect might be engaged to whom the farmers for a nominal cost might have recourse and who would send an assistant to any locality to advise and then make drawings which would assure the farmer a suitable plan for his farm buildings, fittingly expressed on the exterior."



Print No. 11.

The family's help is essential to the proper planning of the residence, but its inexperienced members are not capable of planning a house which is in the highest degree serviceable, comfortable, economical and beautiful.

There is perhaps no better proof of this statement than the results of the competition for farmhouse plans conducted in 1910 by a western farm paper at the suggestion of the Chief of the Office of Farm Management. This competition, the

first of its kind, must have brought out the best efforts of the farmers and their wives. The man who suggested the competition was prevailed upon to act as judge in awarding the prizes, and the following remarks from his report partly explain the results --

"About 660 plans of farmhouses were submitted. No one of them was fully satisfactory. The contest revealed the fact that architectural problems are generally not understood. Many of the best plans submitted were strictly city houses and not adapted to farm purposes."

"Architecture in this country has developed almost exclusively out of considerations that apply to city conditions. Country conditions are not met in the ordinary architectural literature of the day."

"The Planning of farmhouses has not been reduced to a scientific basis. By far the larger number of plans submitted insist upon some particular pet notion of the contestant and a single feature, sometimes important and sometimes not, is inserted into the plans frequently to the neglect of other important features."

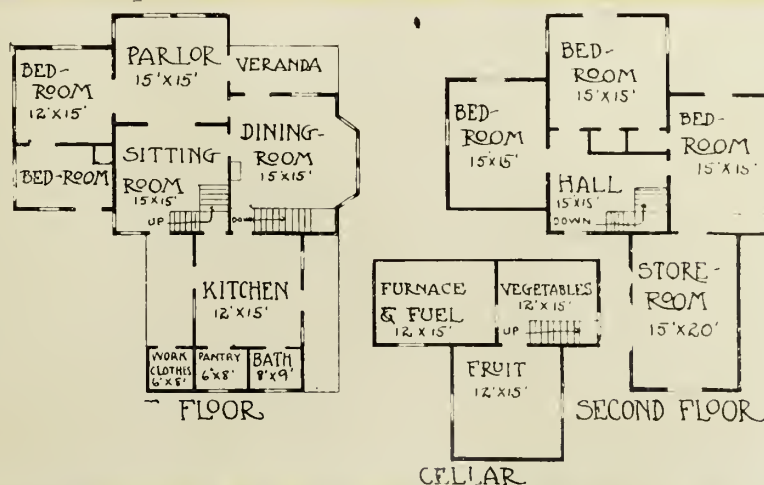
To verify this statement of the judge, note the opening sentence in the description accompanying one of the plans:

"The front door has a glass panel and on either side of it and the fireplace are long, narrow windows five feet from the floor with small diamond-shaped panes. The same kind of glass should be used in the bath room, etc."

The kitchen is mentioned in the latter part of the description, but dismissed with one sentence.

Another competitor begins thus:

"Having lived a number of years on a farm and knowing the many extra steps the wife and mother takes in her daily work, I have often thought if I were to plan a house and home I should have it built like the following plan."



The plan she submitted has 20 outside corners. The sitting room is enclosed on four sides except for two windows and a door in one corner. The bath room can be reached from one bedroom, only by passing through an adjoining bedroom, the parlor, diningroom and the kitchen, or by going out into the back yard and through the kitchen. It can be reached from the three bedrooms upstairs only by coming down into the sitting room and through the dining room and kitchen. The stair hall on the second floor is 15 feet square, the same size as each of the three bedrooms on that floor.

It is not the tillers of the soil who effect the improvements in farm machinery although working daily with it, nor is it the housewives who can best plan their workshops and family rooms, although they spend a life time in them. It is the men and women who familiarize themselves with the work to be done and then apply themselves to the single task of devising means and methods of doing it most expeditiously, economically and easily. These must be depended upon to handle the farmhouse problems, but as previously stated, their work must have the support of public agencies to attain its best results. When, with the help of such agencies and the co-operation of farmers, these specialists have learned the exact requirements of farmhouses, and have worked out model plans in accordance with the many conditions to be provided for, when they shall have clearly drawn and pictured these houses, intelligently explained them and accurately figured their costs, then no longer will there remain an excuse for the uneconomic and unsightly houses now so common in our rural communities. (See Prints Nos. 9 and 10, page 12.)

It may not be practicable or even desirable for public institutions to furnish plans and specifications worked out for the particular needs of individual farmers, but it will be practicable and quite desirable for it to furnish plans and specifications worked out for the general needs of farmers and to so delineate, illustrate, and explain the plans that laymen may readily understand the

principles involved and apply them to the remodeling of his present house, or to the building of a new one.



Print No. 13.

The multiplicity of conditions to be contended with in planning, designing and constructing domestic buildings, and the infinite combinations of these conditions render impracticable the making of model plans and specifications for individual use without need of some alterations, except for the most inexpensive houses. When, however, the general conditions obtaining in a locality are carefully considered and a number of plans and designs are worked out in accordance with these conditions and the cost of each carefully estimated, then each family may better understand in advance what it should have and what it may rightfully hope to get. It may find among the plans some that so nearly meet its requirements as to need but little change.

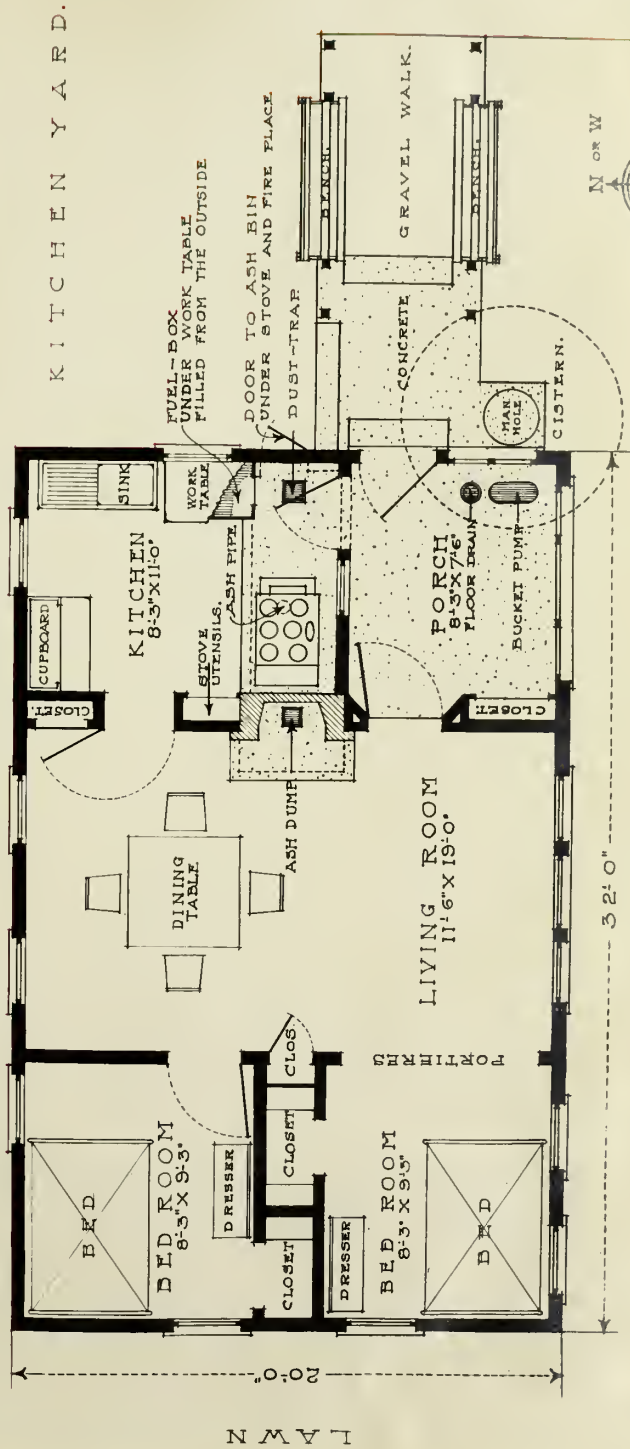
The most inexpensive houses must of necessity be simple and planned along general lines.

Print

No. 14.



Plan No. 1



TO BARN

ARBOR WALK
TO BARN AND LOT.



Renters are shifting and the tenant houses should be planned and built for the average tenant family. It is, therefore, quite possible to make plans and specifications, bills of material, and detailed costs of such buildings that may be used without change over large sections of the country.

When we consider that but little more than one-half the number of farms is operated by owners and that during the last decade the number of rented farms increased by more than 324,000, we may better understand the importance of the tenant-house problem.



Print No. 15

When we consider, too, that the average, annual, net income of farmers, after deducting five per cent interest on their investment, is less than \$400, we may better understand the importance of the inexpensive farmhouse for the owner.



Print No. 16.

Such houses can not be adequate to the families' needs; but they *may*, if intelligently planned, serve the families much better than many of the cheap houses they have. If well designed, they *may*, with the help of vines, shrubs and trees, become the prettiest spots in the landscape and more beautiful than expensive but crowded city houses.



Print No. 17

CHAPTER VI. THE SOCIAL ASPECT OF THE PROBLEM.

The possible saving to be effected in the first cost of farm buildings seems in itself to warrant the careful attention of agricultural economists; but greater than this is the possible economy in household labor, the conservation of women's strength and the promotion of health and happiness in the family. Economic considerations sufficiently justify the work and form the most tangible basis on which to handle it; but they are of minor importance in comparison with the social, ethical, and civic aspects of the problem. So great is the influence of the house upon the home life of the family, and upon the character of its members, that it is one of the most potent factors in our social structure for good or ill. Pleasant, comfortable and happy farm homes



Print No. 18.

tend to hold families together; but cheerless, unlovable, and insanitary houses drive boys and girls to the cities if not to dens of vice. Investigations of prisons, insane asylums, and houses of ill fame have seemed to prove the fact

that sins which account for the existence of these institutions are, most often, bred and nurtured in the inadequate and unhappy homes of the poor, many of which are on the farm.



Print No. 19.

"Dwight L. Moody said of England that it was more in need of homes than of churches."

"The ancient Jews made ample provisions for the home, realizing that what the home is the child will be. The family, home and household all figure prominently in the ministry of Christ; indeed, the primitive Christianity began in the home, and through the home and family was it propagated."

"In the attractiveness of the home lies the true solution of many evils," and to strike at the root of social sins, it is necessary to improve the housing of the great mass of humanity in both city and country.

CHAPTER VII. THE CIVIC ASPECT OF THE PROBLEM.

"The home is the cradle in which is moulded the character of the Nation," and every influence upon the home counts for weal or woe in our national life. Foster love for the home and there will result an unshakable love for country; stifle it and anarchy will walk abroad. Study the problems of the home as carefully as the science of war, and expend upon them funds as great as those spent on our armed defense, and we will have a citizenship so strong in body and mind, so prosperous and so loyal as to be invincible to any foe that might assail us.

The housing of the so-called common people is of vital importance to the Nation's welfare. It has become a problem for statesmen and for the promotion and support of Governments. With better houses we will have better homes; with better homes, better citizens; and with better citizens, a stronger and a better nation.



Print No. 20.

CHAPTER VIII. A PRACTICAL SOLUTION OF THE FARMHOUSE PROBLEM.

The subject matter of this theme is not new. It is patent to the most casual observer, who gives any thought to present economic and social conditions in rural communities. It has become a subject of frequent discussions by the more fortunate women of the farm who have time enough to think and talk about such things, and especially by those interested in the enfranchisement of the women from the unnecessary conditions that rob labor of its pleasures, its healthfulness, and its efficiency, and make the farm home one to be avoided instead of what it might and of right ought to be—the best and the most desirable of all. It is a subject of increasing importance to the agricultural press and to the thousands of readers of farm papers, "House Building Numbers" are now a special feature of many of these papers and, may we not say, the most popular?

These discussions and newspaper articles are arousing a general interest in better farmhouses and they are quite essential to the practical solution of this problem; but they are not in themselves sufficient. They lack the scientific information, the actual facts as to the economic and aesthetic possibilities of the problem and a sure and reliable guide to the attainment of these possibilities. These can only be attained by the systematic methods of investigation, invention, and application which have accounted for the improvements in other equipment of the farm. This is a work which public institutions should undertake.

CHAPTER 1X. COST.

It is quite evident that, for the same money put into farmhouses, much better results would have obtained from skillful and intelligent planning; but it is not evident that this better planning is in itself sufficient to make the dwelling what it ought to be. It may need to be larger, better constructed or better equipped than it possibly can be without a greater cost; or it may, for economic reasons, need to be less expensive.

What Should the Farmhouse Cost?

So many variables and unmeasurable factors enter into this problem, that it is impossible to deduce any formula or rule of practical and general application; except, perhaps, such as may be derived from purely economic considerations.

It is but recently that data have been secured on the cost of the house as a unit in the farmstead, and these are yet too few for definite conclusions. They are indicative, however, of the results that may be determined by more extended investigations and, for the regions in which they were obtained, they are a valuable aid in comparing the costs of housing in country and city.

The figures in the following tables were obtained by the Office of Farm Management, U. S. Department of Agriculture, in farm surveys conducted in 1913, in the states of Michigan, Iowa, Illinois, and Indiana.

THE RELATION OF THE FARMERS' INCOME TO AMOUNT INVESTED IN
FARM BUILDINGS.

Owner Farms - Iowa.

Table 1.

Annual	Income	No. Farms	Average Size	Value of House	Value of Other Buildings
400 &	Less	3	53	\$ 667	\$ 517
401 to	800	13	88	1,000	804
801 "	1200	19	170	916	878
1201 "	1600	15	166	1,133	1,273
1601 "	2000	10	186	1,075	1,250
2001 "	3000	9	230	1,522	1,300
Over	3000	8	327	860	1,388

Owner Farms - Illinois

Table 2.

Annual	Income	No. Farms	Average Size	Value of House	Value of Other Buildings
400 &	Less	3	73	\$ 300	\$1,317
401 to	800	6	74	767	567
801 "	1200	8	107	1,206	388
1201 "	1600	7	147	1,714	886
1601 "	2000	8	163	2,041	1,075
2001 "	3000	17	292	2,215	1,456
Over	3000	24	447	2,267	2,750

Owner Farms - Michigan

Table 3.

Annual	Income	No. Farms	Average Size	Value of House	Value of Other Buildings
400 &	Less	53	70	\$1,142	\$ 918
401 to	800	78	79	1,157	982
801 "	1200	73	99	1,138	1,162
1201 "	1600	46	118	1,473	1,614
1601 "	2000	18	138	1,664	2,311
Over	2000	32	187	1,923	2,395

Owner Farms - Indiana.

Table 4.

Annual	Income	No. Farms	Average Size	Value of House	Value of Other Buildings
400 & Less		22	54	\$ 800	367
401 to 800		31	66	1,081	431
801 " 1200		15	87	768	544
1201 " 1600		19	121	1,271	939
1601 " 2000		9	142	1,600	1,300
2001 " 3000		19	167	1,470	1,405
Over 3000		8	223	1,650	1,413

The farm incomes as given in the tables are the differences between gross receipts and expenditures. For comparison with the incomes of wage earners who buy all foodstuffs, it is necessary to increase the farm incomes by an estimate of the cost of food raised on the farm and consumed by the family. Table 5 shows an average of \$261.92 per family of 4.5 persons for the food products furnished by the farm, and \$406.68 for the total consumption of food. This corresponds closely with the town family represented in Table 6, which has a gross income of \$884. The latter averages 4.54 persons at home and expends 44.15% of its income, or \$390.29 for food of all kinds ("excluding wine, beer and spirits").

Table 5.

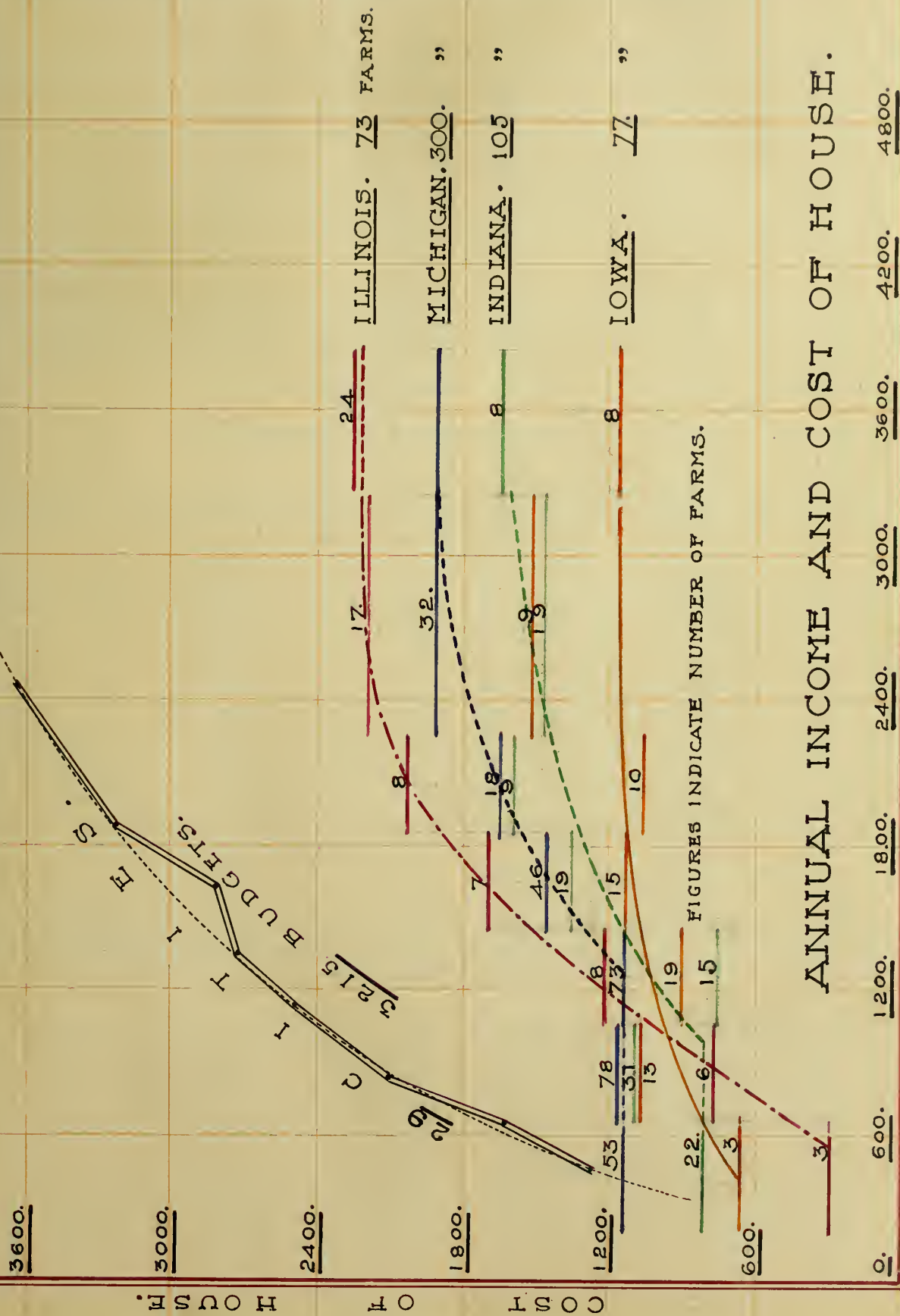
VALUE OF FOOD PRODUCTS CONSUMED ON THE FARM.

Co.	State	:Ave. :Size :Family:	:Ave. :Farm :Acreage:	:No. :Farms:	:Average value of food products consumed per family		
		:	:	:	Bought	Furnished:	Total.
		:	:	:		by farm :	
Lamoille, Vt.		: 4.8 :	130 :	49 :	\$169.17	: \$192.43 :	\$361.60
Otsego, N. Y.		: 4.0 :	118 :	55 :	186.71	: 189.60 :	376.31
Bucks, Pa.		: 5.0 :	77 :	24 :	130.44	: 207.39 :	337.83
Champaign, O.		: 4.0 :	175 :	44 :	124.98	: 248.28 :	373.26
Jefferson, Wis.		: 4.4 :	86 :	51 :	143.25	: 209.44 :	352.69
Montgomery, Ia.		: 4.2 :	161 :	46 :	146.43	: 297.28 :	443.71
Cloud, Kan.		: 4.5 :	152 :	46 :	157.41	: 292.48 :	449.89
McClellan, Tex		: 5.3 :	133 :	44 :	213.47	: 275.62 :	489.09
Troup, Ga.		: 5.4 :	102 :	50 :	104.42	: 376.03 :	480.45
Gaston, N. C.		: 4.5 :	86 :	55 :	71.28	: 330.65 :	401.93
Average		: 4.6 :	122 :	464 :	144.76	: 261.92 :	406.68

\$261.92, or \$260 for even money, may then be considered a fair average for that part of the farmer's income furnished as food produced on the farm.

For further convenience in comparisons, the net farm incomes and the costs of farmhouses have been plotted with corresponding data obtained from wage earners of the city. (See page 28)

Of the recent investigations into the cost of living in the United States, none seems to have been more extensive, thorough, and reliable than that of the British Board of Trade in February, 1909. The data were obtained from 29 cities east of the Mississippi River and from Minneapolis and St. Louis. "The cities were chosen because of their representative industrial character, or their intrinsic importance and an attempt was also made to select those that would fall in the few groups framed on broad lines of geographical distribution." "Altogether, information in regard to rents was obtained for over 90,000 wage earners' dwellings;" but the report consulted, Bulletin No. 93, March, 1911, United



ANNUAL INCOME AND COST OF HOUSE.

ANNUAL NET INCOME.

States Bureau of Labor, gives house rents only for the American-British group (including American, Irish, English, Scottish, Welsh, and Canadian). These rents, however, were obtained from 3,215 budgets. They constitute 42.2% of the whole number of budgets and and $3\frac{1}{2}$ times more than any other nationality.

From these budgets, it has been computed that for an average annual income of \$456, 19.53% or practically one-fifth of the amount was spent for house rent; and for an income of \$2,558, 9.91% or less than one-tenth of it was spent on this item. For these two and for intermediate incomes, the percentages of house rents to incomes are as given in columns 1 and 2 of Table 6. The percentages of cost of house to incomes are as given in columns 1 and 3.

Table 6.

COST OF HOUSING TO CITY WAGE EARNERS.

Av. Annual Income	: Per cent of Income : for house rent	: Per cent of Income : for cost of house	: Nominal cost of house
\$ 456	: 19.53	: 279	: \$1,272
646	: 17.74	: 253	: 1,634
884	: 16.66	: 238	: 2,104
1,135	: 15.34	: 219	: 2,486
1,352	: 14.04	: 201	: 2,718
1,632	: 12.01	: 172	: 2,807
1,875	: 12.04	: 172	: 3,225
2,558	: 9.91	: 142	: 3,632

Column 3 is obtained by capitalizing house rent as obtained from columns 1 and 2, at 7%.

"The average ratio of rental to fee value differs: generally in an office building, it is 8% gross; in an elevator apartment house, 12%; in a flat or tenement, 10%; in a residence 7%." (Real Estate Methods)

A survey of 700 farms in the corn belt of Indiana, Illinois and Iowa, made by the Office of Farm Management in the summer of 1911, revealed the fact that the landlords received on an average 3.5% on their estimated investments; and that the size of their investments had no appreciable bearing on the rate of

income. (Farmers' Bulletin 41) A seven per cent income on the farmhouse in this region is, therefore, double the estimated income on other farm property; and it seems a reasonable allowance for any conservative investment of this kind.

The costs of the farmhouses, within the limits given, vary greatly, whereas the cost of housing of the city wage earner appears quite uniform, and to have been closely determined by economic conditions. The plotted points of the latter vary but little from a curve, which is here plotted as the arc of a circle. This being a closed curve, it can not hold for data much beyond the limit of the highest income plotted. It would seem to obtain only for the class of workmen represented. For professional and business men with higher incomes, the resulting curve would indicate higher housing costs and would seem to conform more nearly to a hyperbola or a parabola. Such curves would indicate a wider difference between the housing costs of farmers and farm laborers than the arc of a circle.

The latter curve is, however, so far removed from the others as to indicate clearly that the farmers represented in them expend a much smaller percentage of their net incomes for housing than the common laborers, tradesmen and factory employees of the city having equal incomes.

Many of these wage earners left the farm because of better inducements elsewhere, and they will not return to it so long as there exists such a disparity between home comforts and advantages there and in the city.

These wage earners have become accustomed to housing conditions commensurate to their incomes, and will not be satisfied in the country with less.

Agriculture is in competition with other industries for tillers of the soil and, until it takes a lead in bidding for intelligence, skill and labor, there will be no "back-to-the-farm" movement. Until it removes the social stigma

assumed by the young people of the farm, because of a consciousness of their unequal home conditions, it can not hope to retain what would otherwise be the best farmers of the land.

The costs of tenant houses are determined solely by economic considerations, and it appears that they should, at least, be equal to as large a percentage of the tenants' net incomes as the costs of city dwellings are of the city wage earners' incomes.

For the minimum cost of farmhouses, the owner may consider himself a tenant and build according to an economic ratio of his income. Such a cost, however, will, in many instances, be incompatible with the best interests of himself and family, for there are those important and immeasurable factors influencing the home life of the family for which no rule can be deduced; but which may justify a greater cost. These are matters of judgment which each family must solve for itself; but having for a guide an economic ratio based upon the incomes and the housing expenditures of thousands of families that so readily adjust themselves to economic conditions in the cities, there would seem to be less excuse for such serious mistakes as are made in the costs of dwelling houses everywhere.

Having fixed in any locality consistent ratios between housing costs and income and between acreage and income, the cost of house per acre is easily determined. Assuming, for instance, the correctness and the sufficiency of the data in previous tables, the costs of houses per acre on the farms from which the data were obtained, should be increased as in Table 7 to make them equivalent to housing costs of city wage earners.

Table 8.

INCREASES PER ACRE IN COST OF FARMHOUSES NECESSARY TO EQUAL
COSTS OF HOUSING CITY WAGE EARNERS.

Iowa.

No. Farms	:	Acreage	:	Increased cost of house per Acre		
3	:	53	:	from \$12.58	to \$12.83	
13	:	88	:	" 11.36	" 14.66	
19	:	170	:	" 5.39	" 12.18	
15	:	166	:	" 6.83	" 15.66	
10	:	186	:	" 6.09	" 16.18	
9	:	230	:	" 6.62	" 15.35	
8	:	327	:	" 2.63	" 11.62	

Illinois. Table 9

No. Farms	:	Acreage	:	Increased cost of house per Acre		
3	:	73	:	from \$ 4.11	to \$ 9.18	
6	:	74	:	" 10.30	" 17.27	
8	:	107	:	" 11.23	" 19.29	
7	:	147	:	" 11.65	" 17.68	
8	:	163	:	" 12.48	" 18.40	
17	:	292	:	" 7.58	" 12.08	
24	:	447	:	" 4.06	" 8.49	

Michigan. Table 10

No. Farms	:	Acreage	:	Increased cost of house per Acre		
53	:	70	:	from \$16.22	to \$ 9.66	
78	:	79	:	" 14.55	" 16.22	
73	:	99	:	" 11.40	" 20.74	
46	:	118	:	" 12.47	" 22.02	
18	:	138	:	" 12.06	" 21.81	
32	:	187	:	" 10.28	" 18.88	

Indiana. Table 11

No. Farms	:	Acreage	:	Increased cost of house per Acre		
22	:	54	:	from \$14.81	to \$12.59	
31	:	66	:	" 16.38	" 19.55	
15	:	87	:	" 8.83	" 23.79	
19	:	121	:	" 10.50	" 21.48	
9	:	142	:	" 11.27	" 21.19	
19	:	167	:	" 8.86	" 21.14	
8	:	223	:	" 7.33	" 17.04	

Two large land owners in Southern Illinois built tenant houses in adjoining communities, and under conditions that would seem to justify equal costs; but one expended a thousand dollars on a six-room house and the other about twice that amount for the same number of rooms. The first contends that his house is all that is necessary to get the tenant. The second considers the better house necessary to get and to retain the better tenant, and that the increased profits are far in excess of the amount necessary to pay interest on the increased investment.

Such differences in judgment evidence the great need of a guide in deciding on the costs of such houses.

Building as Expensive in Country as in Town.

It is an opinion of many that the farmhouse may be built for less cost than the same house in town. The farmer may do his own hauling and excavating and some of the labor, if the house is built at that season of the year when his time is not required for farming. Aside from a possible saving affected in this way, it is more than offset by the extra cost of water supply, sewage disposal, the installation of a lighting system, the greater length of haul for the materials of the building and of workmen, and the general inconvenience and expense of greater distance from shops and market. The farmhouse should, therefore, especially if equipped with modern conveniences, be figured at a cost not less than that of the same building within the city limits.

Unit Costs of Houses.

The most dependable short cut for approximating the costs of buildings is that of computing the cubic contents of the structure, and multiplying the number of cubic feet by the unit price determined by actual practice in the locality in which the building is to be erected. Of such unit costs now available, perhaps none is more reliable for present use than those published in House and Garden, October, 1912. These were obtained by sending copies of the plans, elevations and specifications of one house to "architects throughout the United and Canada, asking for information as to the cost of this particular house in each locality."

"In giving a scale of prices such as above it was necessary to take as a basis a certain type of house; this is one which includes all the conveniences and arrangements suitable for the average family without any special features or elaborate details. The construction is supposed to be thorough and materials first-class. It is simply a good substantial home, built according to the custom of the locality for a house of this class. These figures are for a completed house with the exception of the lighting fixtures, which may cost any amount

one is willing to pay. They could be procured for \$50 as a minimum."

Table 12.

COMPARATIVE COSTS OF BUILDING AND BUILDING MATERIALS.

Cents Per Cubic Foot.

	Frame	Brick	Stone	Stucco on Metal Lath
New York City	17	21 $\frac{1}{2}$	22 $\frac{1}{2}$	18
Philadelphia	10% to	15% less		
Maine	14	17	20	15
Ky. & Md.	10 to 12	12 to 14	15 to 20	11 to 14
Chicago	15 " 16	18	20	16 " 17
Middle				
West	10 " 17	12 $\frac{1}{2}$ to 20	16 to 25	12 " 18
Pacific Coast	8 $\frac{1}{2}$ " 13	9 $\frac{1}{2}$ " 14	14 " 16	9 " 14
Colorado	12	14	15	13
Arizona &				
New Mexico	12	13 $\frac{1}{2}$ to 14	16	13 $\frac{1}{2}$ to 14

COSTS OF MODERN EQUIPMENT.

The costs of labor-saving devices not included in the unit prices given above, are enumerated as follows, by Allan L. Benson, in the April, 1914, number of "Good Housekeeping:"

Gasoline engine and dynamo	\$140
Electric cook-stove	36
" washing machine	75
" vacuum cleaner	65
Dish-washing machine	15
Gas-range	20
Total	<u>\$351</u>

For those who care to spend more money, I should advise all the foregoing items and, in addition:

A gas-producing machine	\$400
Electric ironing-machine	<u>115</u>
Grand Total	<u>\$866</u>

A plant that would make a farmer's home excel 99% of city homes would contain all the items in the two foregoing lists except the portable vacuum cleaner; and in addition:

A stationary vacuum cleaner	\$300
Water tank and pumps	<u>100</u>
	<u>\$1,201</u>
Grand total (without vacuum cleaner)	

"***** any farmer who can afford to buy himself a second-hand automobile, can afford to buy his wife the outfit described in the first list."

-PART 2-

ARCHITECTURAL PROBLEMS OF THE FARMHOUSE.

CHAPTER 1. PERMANENT CONSTRUCTION.

Architectural problems are divided, primarily, into those having to do with the stability of structures, their usefulness and their beauty. Of these three divisions, the conditions which differentiate the farm dwelling from the city house fall principally under the second and third; but the permanency of farm buildings is of increasing importance and deserves consideration.

Destruction of Buildings by Lightning and Fire.

"It has been shown satisfactorily by Flammarion and Lawson that danger from lightning stroke is reduced to a minimum in large cities and very thickly populated districts." (Bulletin No. 26, U. S. D. A.)

In other words, farm buildings are in greater danger of destruction by lightning than city buildings. Of the number of fires by lightning of insured buildings in the United States, there were, for the eight years beginning with 1890, 625, 457, 839, 660, 852, 839, 1,738, 1,548, respectively. Of these 4,891 were of barns, 2,035 of dwellings, 328 of churches, 153 of factories, 151 of other buildings, a total of 7,558 fires. (Farmers' Bulletin No. 26, U.S.D.A.) The number of farmhouses represented by these figures is not stated; but it will be observed that the number of barn fires by lightning exceeds that of all other buildings in city and country.

The effectiveness of lightning rods in protecting buildings from lightning stroke is commented upon by Prof. Alfred J. Henry, of the U. S. Weather Bureau, as follows: (Farmers' Bulletin No. 367)

"Whether or not to install lightning conductors on one's property is a question, after all, of individual judgment. If the property is insured against loss by lightning there would be little incentive toward incurring additional expense



for lightning conductors. In case of an isolated farm building standing apart from trees it would seem that the conservative course would be to erect an inexpensive system of lightning conductors, such as will be described in the concluding part of this paper."

"The ordinary farm building is not difficult to protect from lightning flashes in the great majority of cases. While absolute protection can not be secured unless the building be incased in a network of wires, it is believed that a building with a properly installed system of lightning conductors will fare better than one without such a system in case a discharge of the most violent type should fall upon it."

He makes this further statement in regard to "Buildings with Metallic Roofs:"

"A metallic roof properly connected to the earth affords a reasonably good protection to the building from lightning. In suburban districts where frame buildings with tin roofs prevail there is little destruction by lightning; most of the buildings have down rain spouts, which serve to conduct the discharge to the earth. In the case of an isolated building with a tin roof care should be taken to see that the down rain spouts are connected with the ground. It will not do to stop them within a few inches of the ground; there should be an unbroken metallic path from the ridge of the roof into the ground."

"In the case of a building with a metal roof, but no down spouts, it is desirable, in order to obtain protection from lightning, to run a wire conductor from each of the four corners of the roof to the earth. The precautions described in the preceding paragraph as to making good metallic joints should be observed."

City building ordinances require that only non-combustible materials shall be used for the walls and roofs of buildings within the fire limits. They regulate also the interior construction of buildings with regard to safety from fire. These precautions against fire and the modern provisions for fighting it, render the congested city dwelling more secure against destruction than the farmhouse.

All the buildings of the farmstead are jeopardized by their proximity to



Print
No. 21

others and by the inflammable materials of which they are constructed. The fire hazard is especially accentuated in the connected farmstead so common in New England.



Print No. 22

The higher insurance rates incident to this greater fire risk and the obstruction of the barn to light and ventilation in the kitchen and to a better outlook from it, are now considered by many New Englanders to more than offset the convenience and the comfort in winter of the connected type of buildings.

Contrary to the requirements for reduced lines of travel, safety from the spread of fire requires that the buildings be disconnected and sufficiently removed to prevent the ignition of one from the other. The distances apart may be reduced according to the non-combustible materials of the walls and roofs, and the provisions for fighting fires; but with wood-covered roofs and walls, the larger buildings should be not less than 150 feet apart.

The barn filled with hay makes the hottest fire, and it is the building most often struck by lightning. (See page 3) During the summer when its fire hazard is greatest, it should be to the leeward side of the house, which, in this country, is usually the north.

Fires Originating in the House.

Of the fires originating within the farmhouse, the larger number result from faulty flue construction. Chimneys are built with 4" walls, unprotected by terra cotta flue lining, and in many instances supported upon wall brackets. Studs, joists and rafters are placed tight against these chimneys. A number of buildings have been found in which the chimneys are offset in the attic as much as two or three feet to reach the comb of the roof. The inclining brick work is supported on 2 by 4's which are boarded over and nailed to the rafters and joists.

Lime mortar seems to be used exclusively for brick chimneys, and this is quite often robbed of its moisture before it sets, by the dry brick. Print No. 23 of a Pennsylvania farmhouse is an example of this faulty chimney construction,



Print No. 23

and Print No. 24 of a brick house in the same farm community, built in 1845, is an example of what might reasonably be expected of good work.



Print No. 24

In a new Pennsylvania farmhouse, (See Print No. 11, page 13) the bedroom above the kitchen is heated by the smokepipe from the stove below. This pipe extends through the floor some distance from the wall and enters the brick flue near the ceiling of the bedroom. The children have learned to avoid the pipe; but the chances for burns and for fire condemn such a practice. The amount of room lost because of the pipe cost more in the construction of the building than can be saved by such "economy."

Many fires in modern buildings originate at the hot air furnace in the basement, because of insufficient protection to woodwork. These fires spread to the partitions and outer walls and through openings that may exist. Many instances of quick fires in frame and brick-veneer buildings have proven the absence of firestops in walls and floors. Each space between studs became a roaring flue which baffled all efforts to save the building. A little more protection at the furnace would have precluded the starting of such fires, and two-inch lumber intercepting the course of the flames would have made them more easy to control.

The great loss of farm buildings from fire emphasizes the need of building ordinances for rural districts as well as for the cities.

Destruction of Buildings by Wind.

The destruction of property by wind and the resulting loss of life due to flimsily constructed buildings, is quite appalling, and the disasters so often charged to Divine Providence might more correctly be charged to criminal carelessness, or to ignorance in building.

It is a common statement that cyclones are irresistible and that some houses withstand them only because of the freakish nature of the winds. It is pointed out that large brick and stone buildings have been wrecked in disastrous storms, and that no small dwelling house of wood, however well constructed, could withstand such a force.

Notwithstanding this fear, modern office buildings rise from a narrow base to more than fifty stories in height. They sway in the mighty grasp of an unobstructed wind; but none has yet yielded to its power.

Farmhouses are not built upon a skeleton of steel, but it is not necessary that they should be to resist many of the winds that destroy them. Some thirty years ago, a Kansas twister scattered the debris of a three-room house far and wide over the prairie; but this house was carelessly built and set upon piers. It offered but little resistance to the wind. The small stable nearby was built upon posts which extended two or three feet into the ground. These posts were inclined by the force of the wind several degrees from the vertical and the roof of the stable was blown off; but the walls of the structure stood and the horses were unharmed. The destruction of the dwelling was to the neighborhood an evidence of the irresistible force of the storm and the escape of the horses was considered one of its miracles.

In a small village of the same prairie, stands the two-story house of a banker. It has the wide overhanging cornice so desirable in hot climates, large and elegantly finished rooms connected with wide openings for the better entertainment of guests, and all of the conveniences usual to such homes. This house is built upon a frame work of 1 5/8 in. lumber, not a stick of which is more than 7 5/8 in. wide. The studding are 1 5/8 by 3 5/8 inches, and are covered on the outside with nothing more than thin boards of siding. There is no sheathing, or building paper, wall braces or firestops - only a framework of sticks and these carelessly put together. This type of construction is the rule, and not the exception in the framing of farmhouses in some of the stormiest regions of our country.

The masonry work is often as carelessly done as the woodwork and its greater resistance is, in many buildings, due solely to its greater weight. In removing portions of a 13-inch wall in a college building of the West, it was found that mortar in the outer courses had practically no adhesion to the bricks and that many bricks of the inner course had no mortar at all. These walls have, for 20 years, resisted wind by sheer force of gravity, and it is inconceivable how they could stand in such cyclones as are common to that region.

To be wind-resisting the house is the better if it has low sloping roofs, no dormers, cornices or porches; if it has a closed foundation, heavy brick chimneys built from the ground and with cement mortar; if it has outside walls of good masonry or of studs covered with close and well-nailed sheathing; if it has heavy, well-braced corner posts, double studs at all openings, and partitions without large openings, that are arranged to brace the building in both directions.

It is better if the windows have outside shutters that are well hinged and that may easily and securely be fastened; if they have small panes of glass put

in on a bed of putty; if the casement (hinged) sash are small so as to be more easily closed against the wind; and if all sash and doors be provided with metal weather strips to exclude wind, cold and dust.

Some of these requirements are inconsistent with others and can not fully be attained; but it is not necessary that they should be for the construction to endure against all but the most destructive winds.

It has previously been stated that many country people are living in out-of-date houses. Some of these are of brick and stone but more are of wood. Some of the latter stand intact after more than a century's use, and on farms



Print No. 25

which would not today justify an expenditure for half so large a building.

Print No. 26 is a photograph of one of the older Dutch Colonial houses as is



Print No. 26

evidenced by the absence of dormer windows. The writer was unable to learn anything more of its age than that it was "very, very old." Print No.27 is the photograph of a house on Long Island Sound, that was once a target for the British gunboats. Its floor timbers have recently decayed, because of a damp and unvent-



Print No. 27

ilated cellar, but otherwise the house is in good condition. Print No.28 is of another Long Island farmhouse, reputed to be more than 200 years old. It has a



Print No. 28

modern roof, but otherwise stands as originally built.

Thousands of these frame buildings in the East (see Print No.29) attest the durability of wood construction, and the fact also, that they have lasted through and beyond the period of their greatest usefulness.



Print No. 29

"We may take it as the opinion of competent persons," writes an English authority on this subject, (A.Dudley Clarke, F.S.I., in Farm Buildings, Their Cost and Arrangement) "that even where there is no lack of funds, and no unwillingness to use them for the improvement of homesteads, it would be a mistake, in many instances, to expend money in putting up buildings too substantially."

The better materials for building are to be desired, but not at the expense of needed room and better equipment in the house.

CHAPTER 11. UTILITY.

Buildings are erected primarily for their usefulness and they can not be good examples of architecture, in the broad sense of the term, if this purpose has been subserved to constructive and aesthetic requirements.

The house as a shelter should protect its inmates against heat and cold, wind, rain, hail, snow, and lightning. It should give protection, also, from outside foes and provide means for cleanliness, for privacy, for convenience and for social life in the home.

Protection from Heat.

The rooms most in need of protection from the sun should be on the shady and windward side of the house during that time of the day when the heat is greatest. All of the rooms, for that matter, are better throughout the year, on the east than on the west, except, possibly, in the warmer climates where the heat is excessive all the day. There, the kitchen is cooler during the forenoon if on the west and south, and during the afternoon, when but little used it shields the dining or sitting room from the sun. (See Print No. 30)



Print No. 30.

f m

Rooms that can not be on the favored side of the house can, in many plans, be insulated against the hot afternoon sun by intervening clothes closets, store-rooms, or stairways, and by the kitchen as just explained. A porch or gallery, although usually better for use on the south and east, may sometimes be justifiable on the west for its value as an awning; but the shade of trees near the house to prevent the reflection and the radiation of heat from the ground, will better accomplish this purpose.

Window shutters are, perhaps, as valuable for their protection against outside heat as for any other purpose. That they are not more generally used is due partly to their interference with outside fly screens, and partly to their cost. The interference may be obviated, and the cost is more often justified than applied.

Various wall constructions have various insulating values. Thick masonry walls absorb much heat and transmit it slowly. If furred on the inside with strips, or hollow bricks, or tile, the air spaces add considerably to the insulation and to the damp resistance of the walls.

Stud walls inclose air spaces which, if made tight and so obstructed as to prevent the circulation of air within them, will have an insulating value greater than a much thicker masonry wall. Without close sheathing and good building paper on the outside of the studs, and cross-bridging, firestops, or insulating material between, the air spaces have a very low efficiency.

Still air is the best non-conductor of heat, and that method of insulation is best which accomplishes the immobility of the confined air with the least amount of conductive material. Mineral wool, granulated cork, hair felt, etc., are excellent materials for this purpose, but too expensive for the average dwelling. Of the cheaper materials, none has proven more efficient than planer

shavings and, if properly confined against fire and vermin, this material may be used to advantage for filling between the studs of frame houses. It is used extensively in the walls of cold storage buildings. Sawdust is too dense for high efficiency as an insulating material.

Wide cornices are also effective in thwarting the rays of the sun and in adding to the comfort of the rooms. Observe the depths of the shadow lines of the three and four-foot cornices in two Oklahoma houses designed by the writer. (See Print No. 31)



Print No. 31.

In the other Oklahoma house shown by the preceding print, No. 30, page 48, the cornice affords no protection to the door and windows from the hot rays of the noon-day sun.

The second floor of a story-and-a-half house in the warmer states is almost uninhabitable during the summer months, yet this type of farmhouse prevails in



Print No. 32.

some regions of the South. Prints No. 32 and 33 are of houses near Oklahoma



Print No. 33.

City. The families sleep under the trees during the summer months. A cot may be seen on the porch of the first house.

The full story under a ventilated attic, Print No. 34, is much to be preferred in warm climates and the second-story rooms had better be left unfinished for a time than to be rendered useless by the heat for three months of the year.



Print No. 34.

The plans should be made with consideration, also, for excessive heat generated within the house. Doors and windows should extend near to the low kitchen

ceiling and be so arranged as to permit of cross drafts to blow the heat and odors of the kitchen away from the building.

A metal hood over the range connected to a ventilating flue is quite effective for this purpose, but it seems seldom to be used in farmhouses. A more common method of accomplishing this, particularly in the eastern states, is that of inclosing the stove in a separate compartment with a ventilator at the ceiling, as in Plan No. 2, page 53.

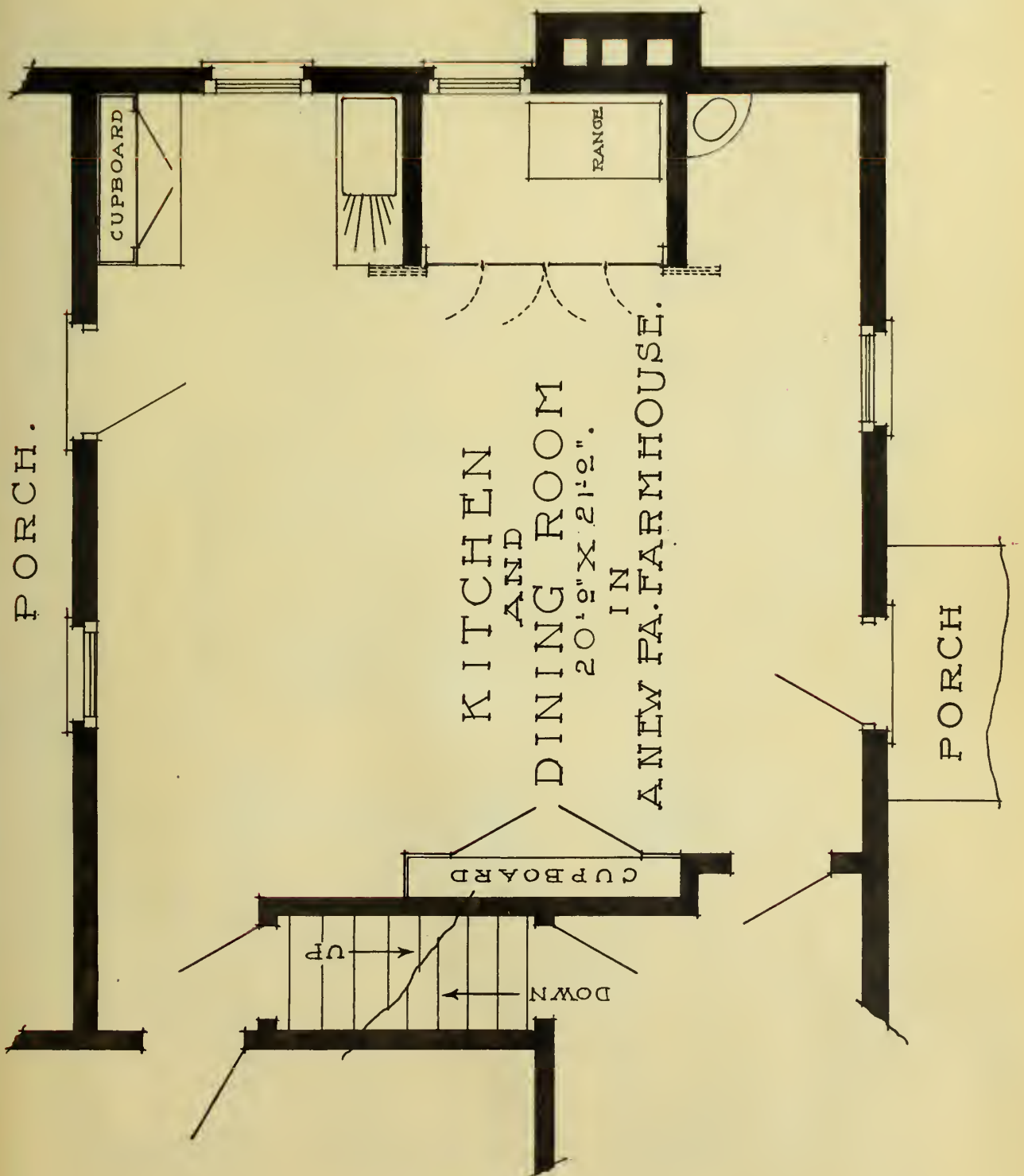
Drawing No. 2, page 54 is a scale drawing of one type of "ventilated kitchen fireplaces" found near Hopewell, N. J. Apparently, it could be built as well with less material.

It was a practice in the South during the days of slavery to have the kitchen detached from the house, and in some instances removed to a corner of the yard. A few houses are yet built in the South with the detached kitchen, as shown in Print No. 35. This arrangement is very efficient as a protection in summer to

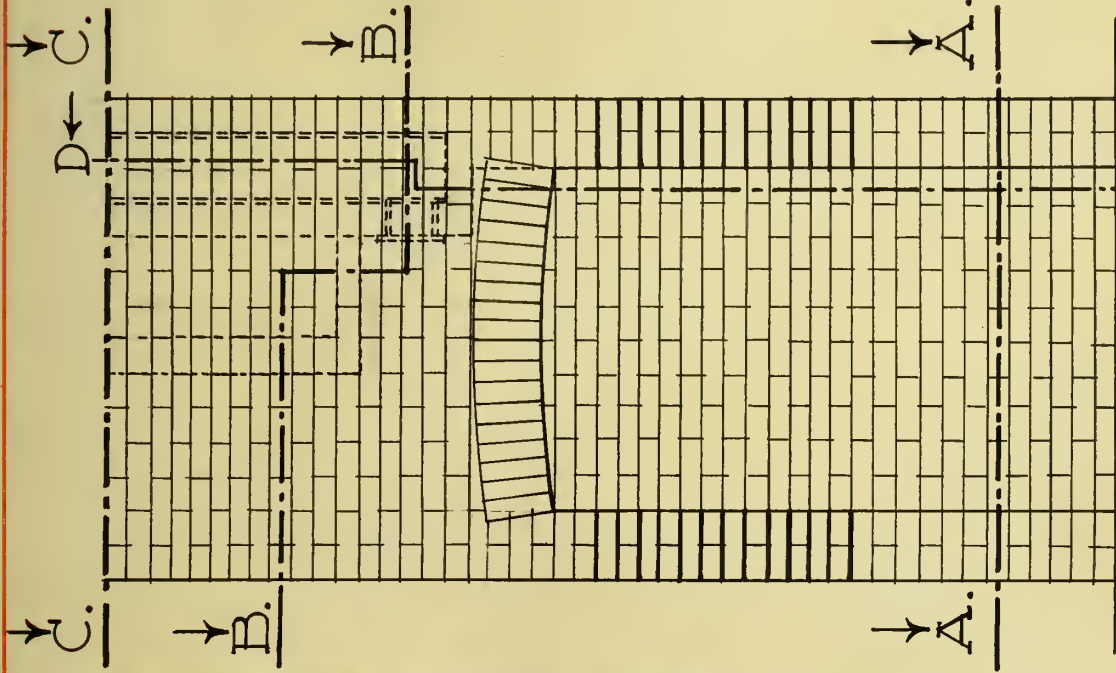


Print No. 35.

other rooms of the house, but it is necessarily inefficient in labor. As a compromise between this plan and that of having the kitchen exposed on one or two sides only, the placing of the service portion of the house in an ell or wing,



Plan No. 2.

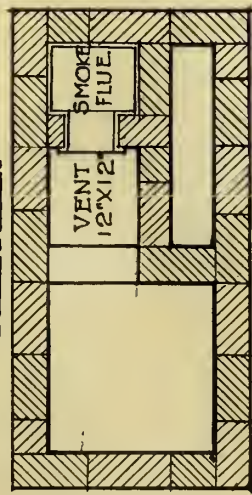


SECTION.
D.—D.

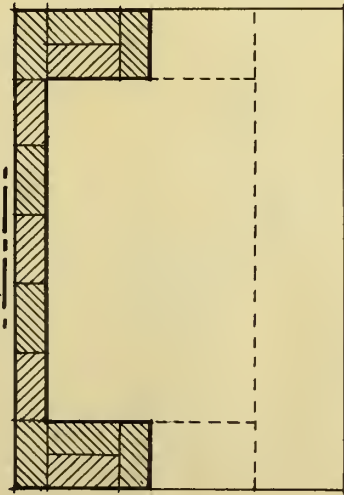
FRONT
ELEVATION.
D.—D.



PLAN AT
C.—C.



PLAN AT
B.—B.

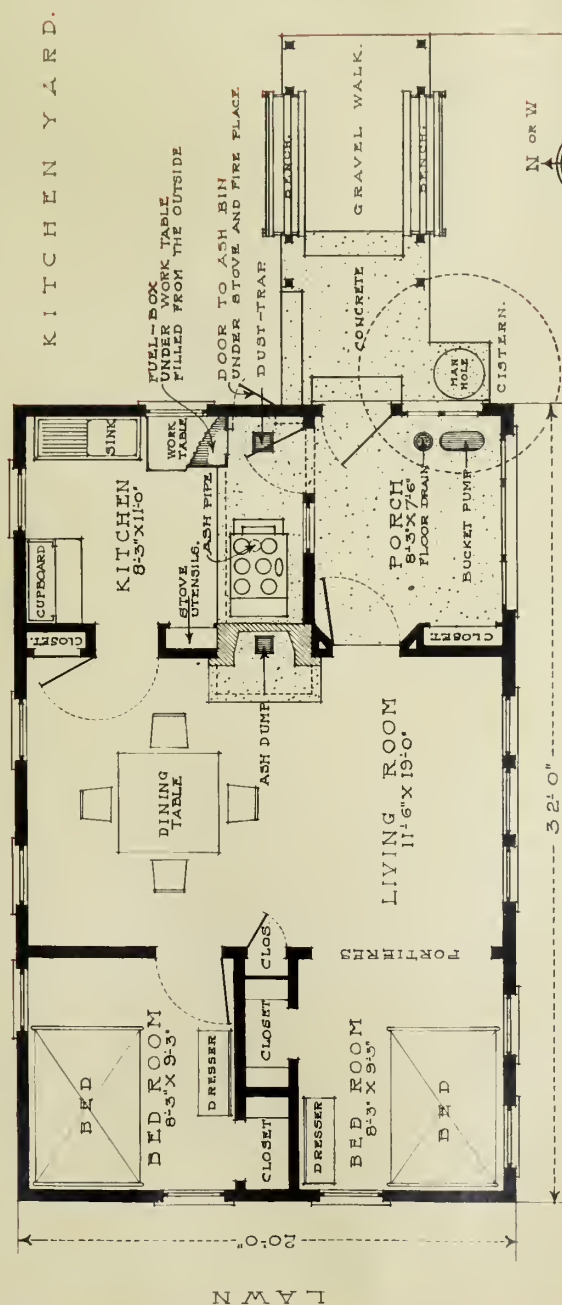


PLAN AT
A.—A.

VENTILATED KITCHEN FIREPLACE IN A NEW JERSEY FARMHOUSE.
SCALE $\frac{1}{2} = 1'-2$.

as in Plan No. 12, page 64, or in one end of the house, as in Plans Nos. 4 and 10, pages 56 and 62, is quite satisfactory. It is then possible to ventilate and light it from three sides and to have the fourth side adjacent to the dining or living room and the stair hall.

VEGETABLE GARDEN.



Plan No. 4

D R I N K

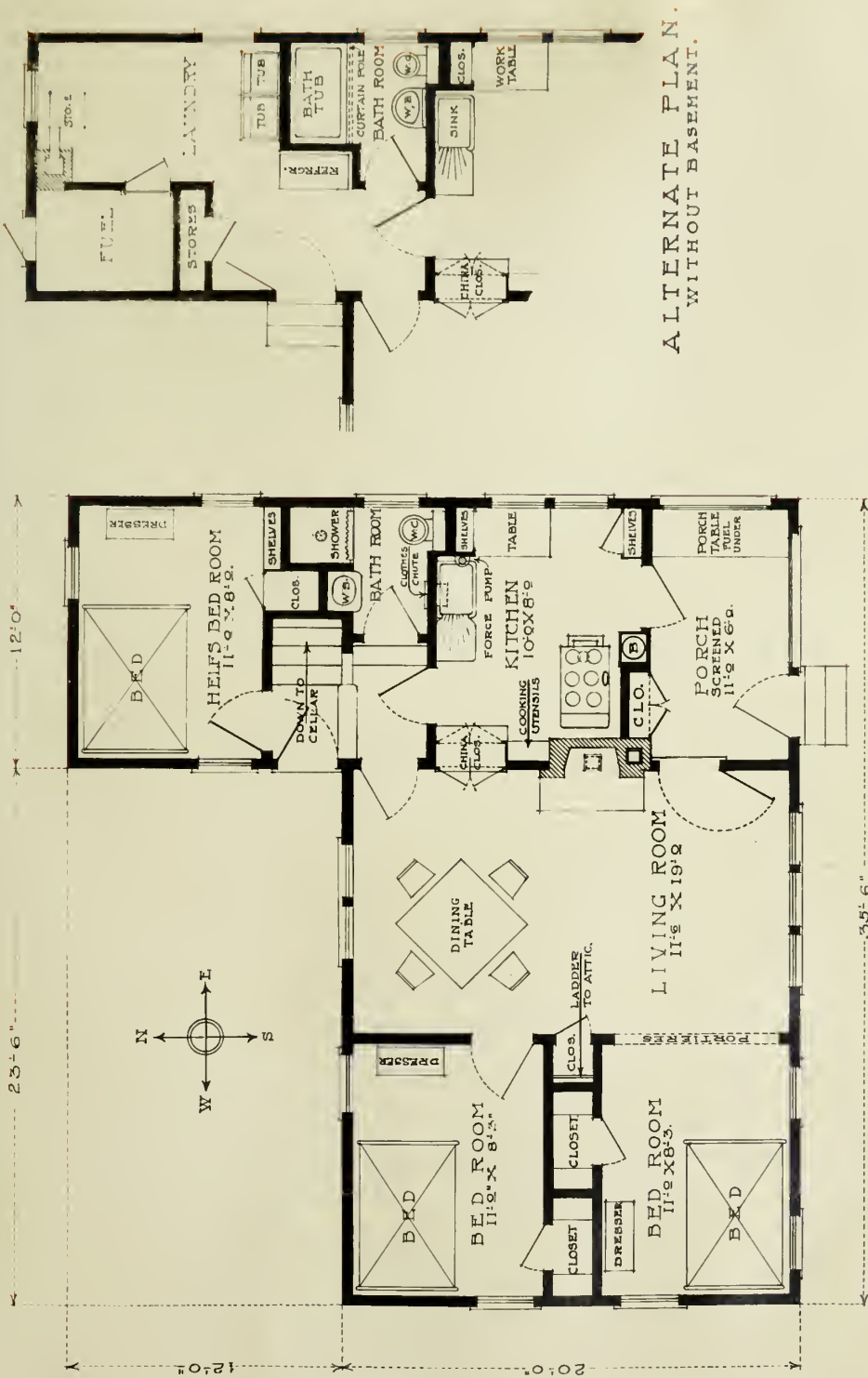


FARM TENANT HOUSE.

LAWN.

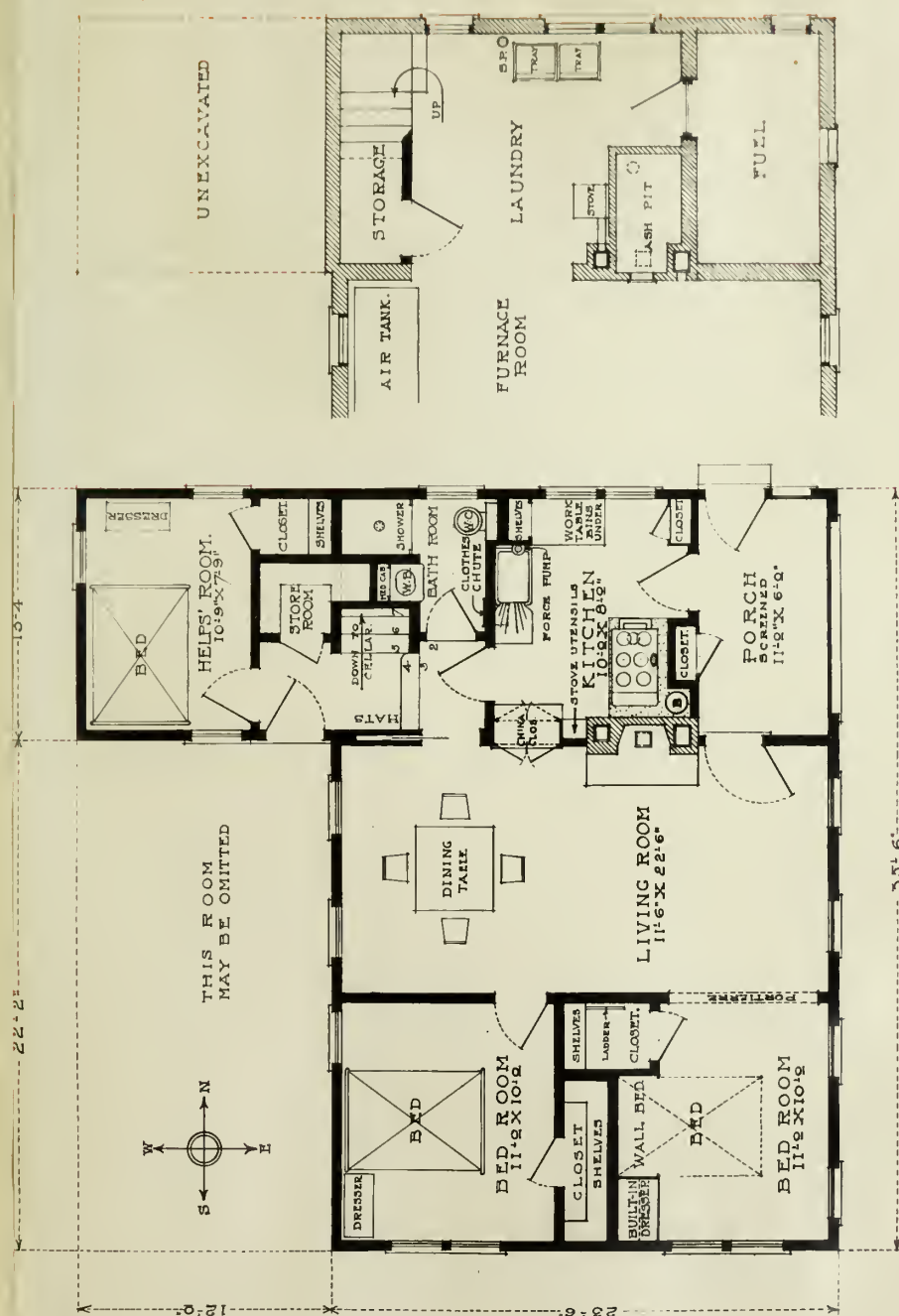
TO BARN

ARBOR WALK
TO BARN AND LOT.

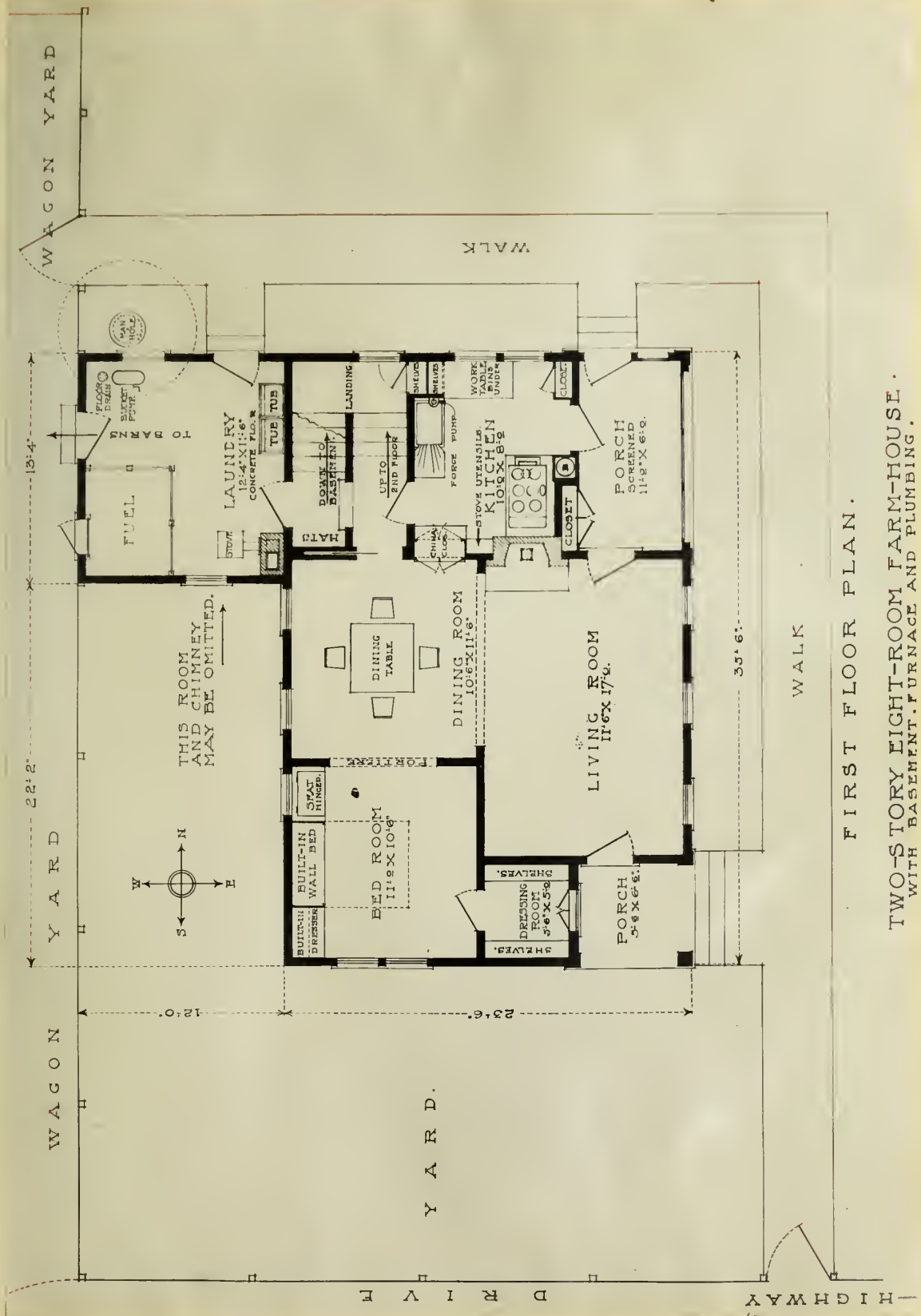


Plan No. 5.

ONE-STORY FIVE-ROOM FARM-HOUSE.
WITH BASEMENT, FURNACE AND PLUMBING.

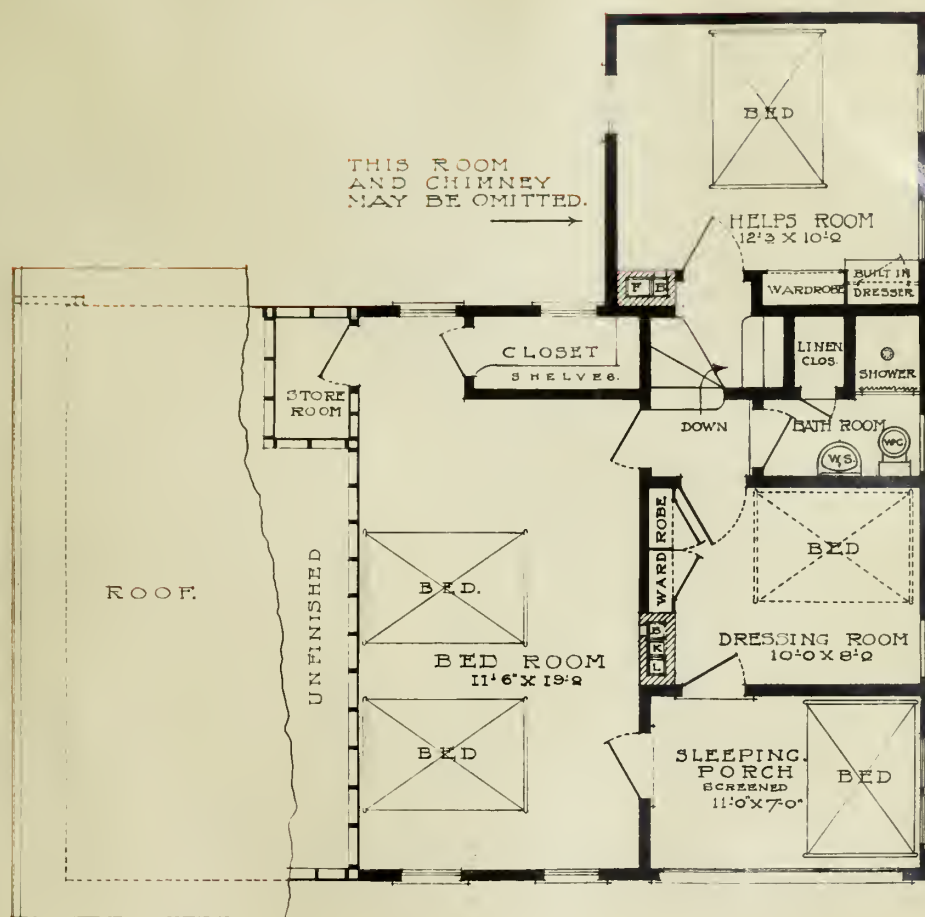


ONE-STORY FIVE-ROOM FARM-HOUSE.
WITH BASEMENT, FURNACE AND PLUMBING.



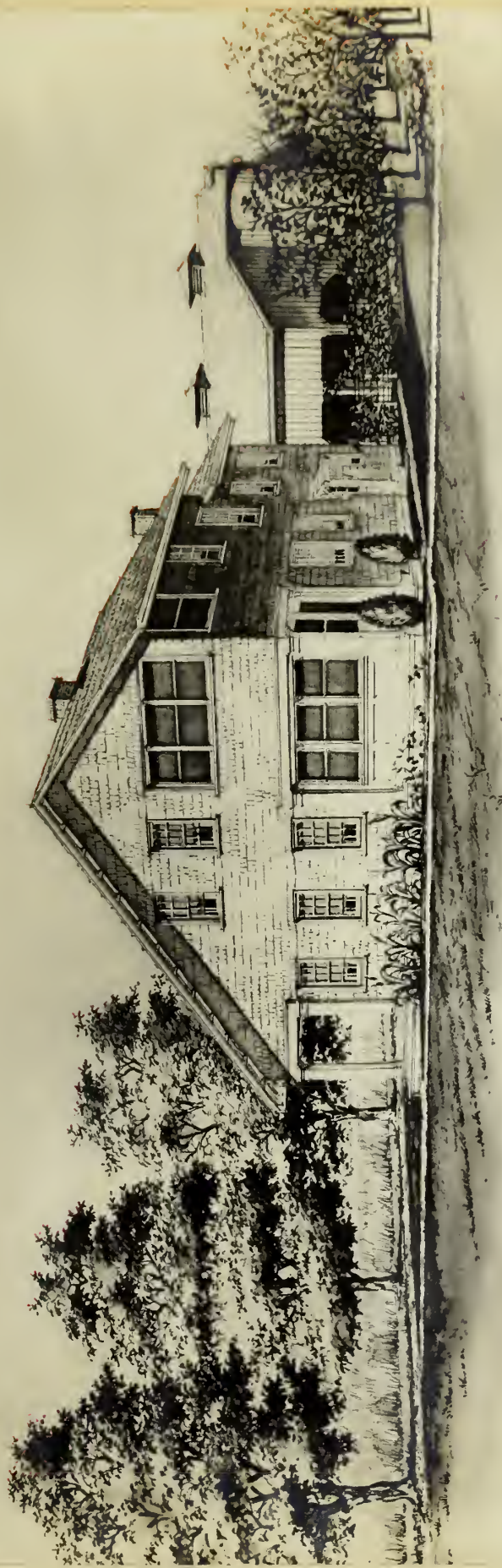
FIRST FLOOR PLAN.

TWO-STORY EIGHT-ROOM FARM-HOUSE.
WITH BASEMENT. FURNACE AND PLUMBING.

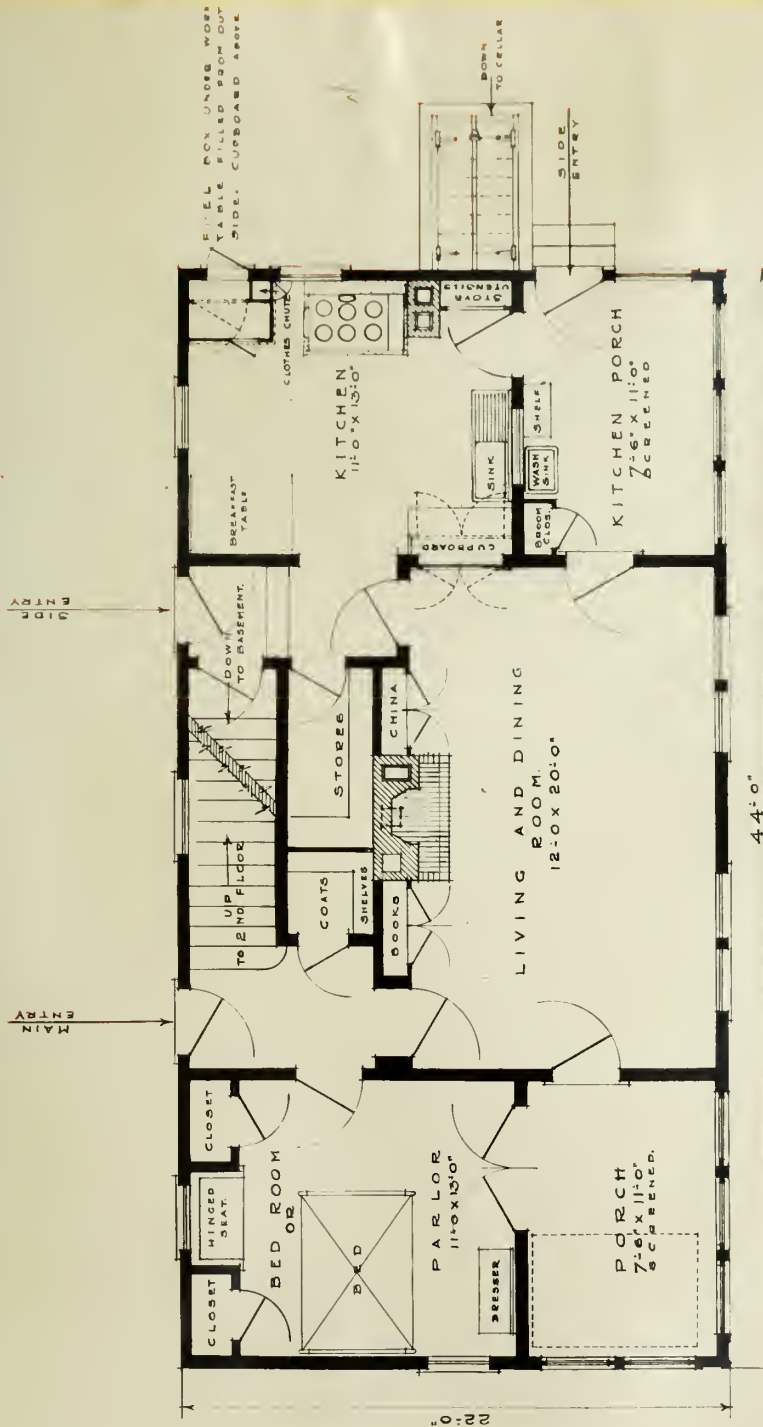


SECOND FLOOR PLAN.

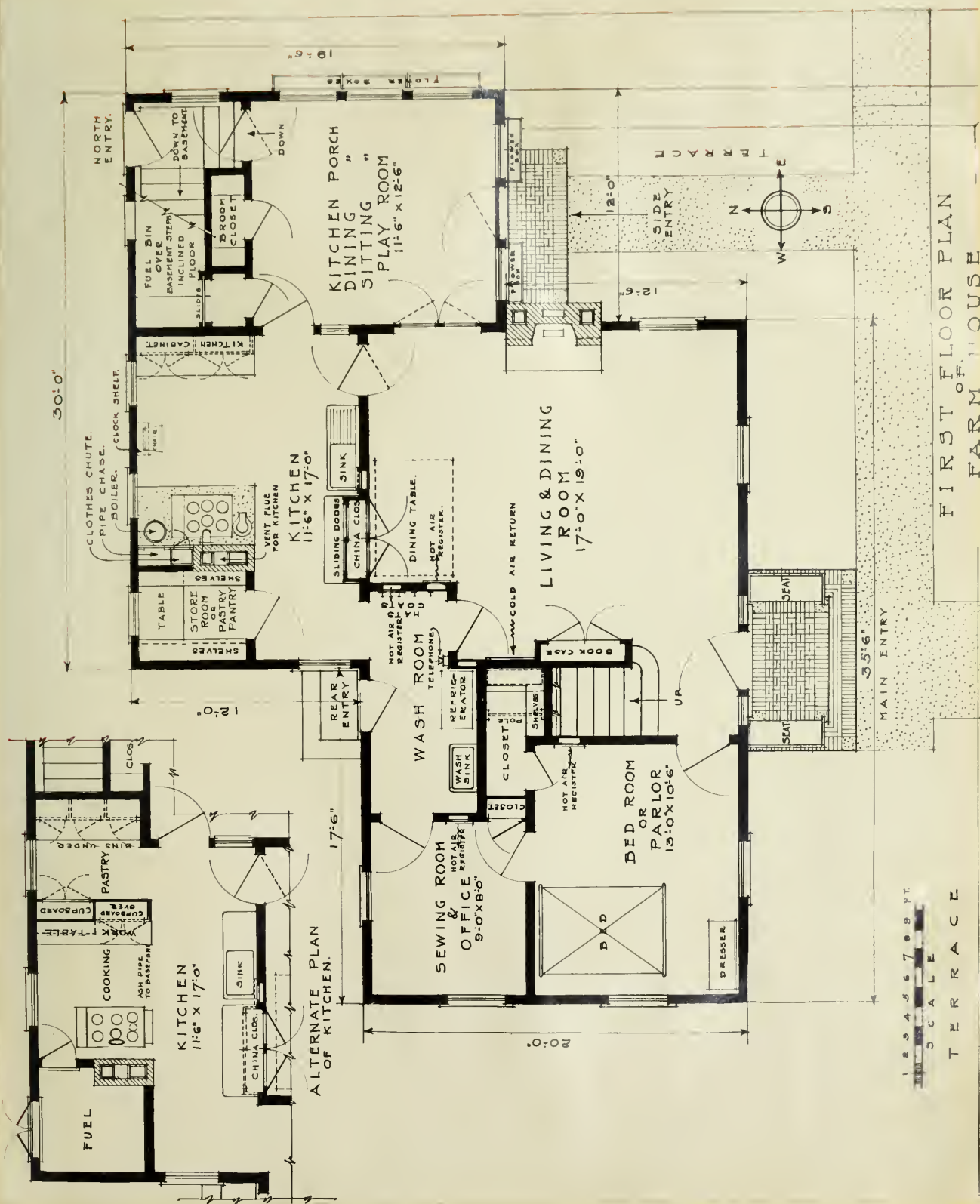
TWO-STORY EIGHT-ROOM FARM-HOUSE.
WITH BASEMENT, FURNACE AND PLUMBING.



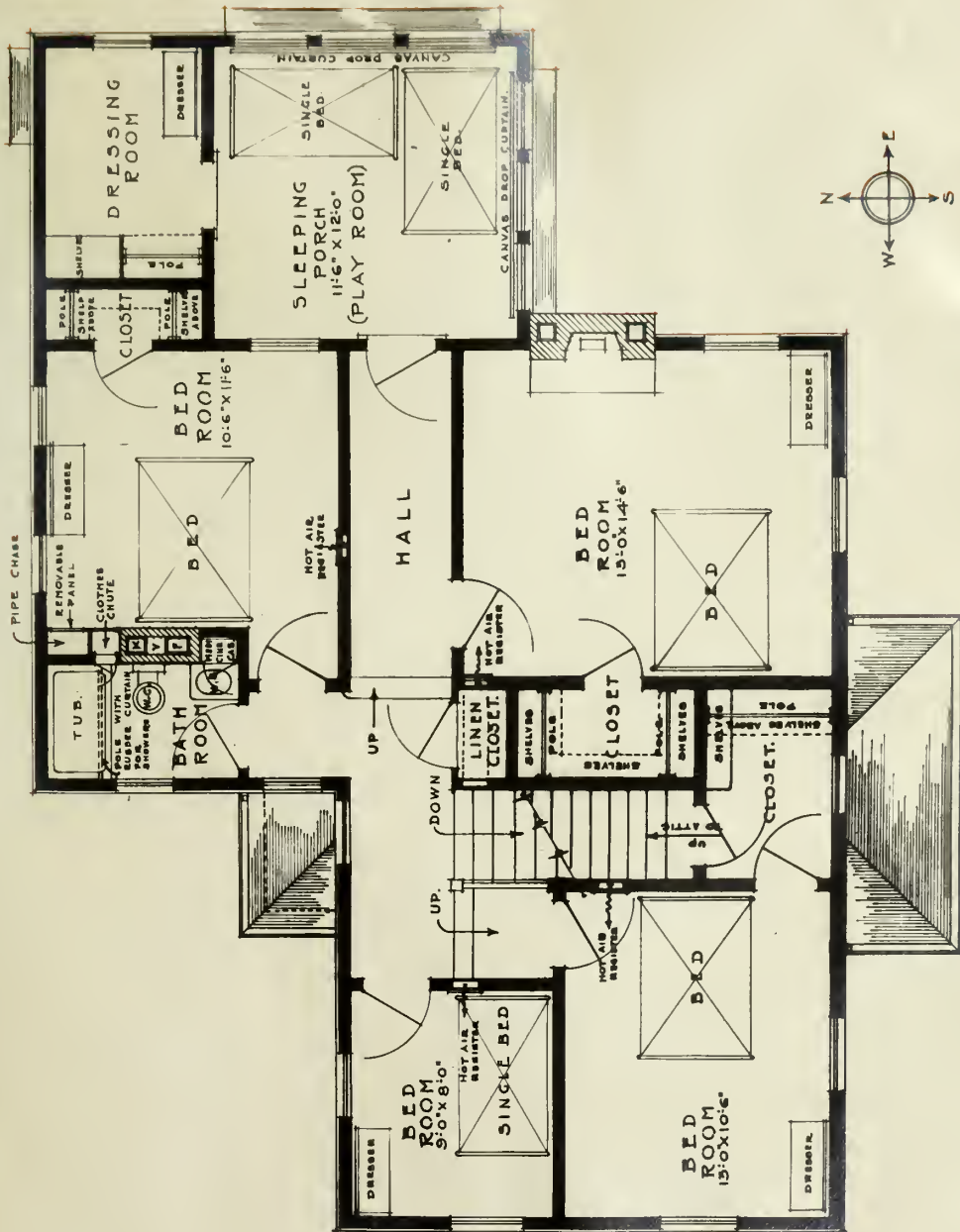
Plan No. 9.



FIRST FLOOR PLAN
SEVEN-ROOM
FARM-HOUSE
SOUTHERN OR EASTERN EXPOSURE
FOR ALL ROOMS



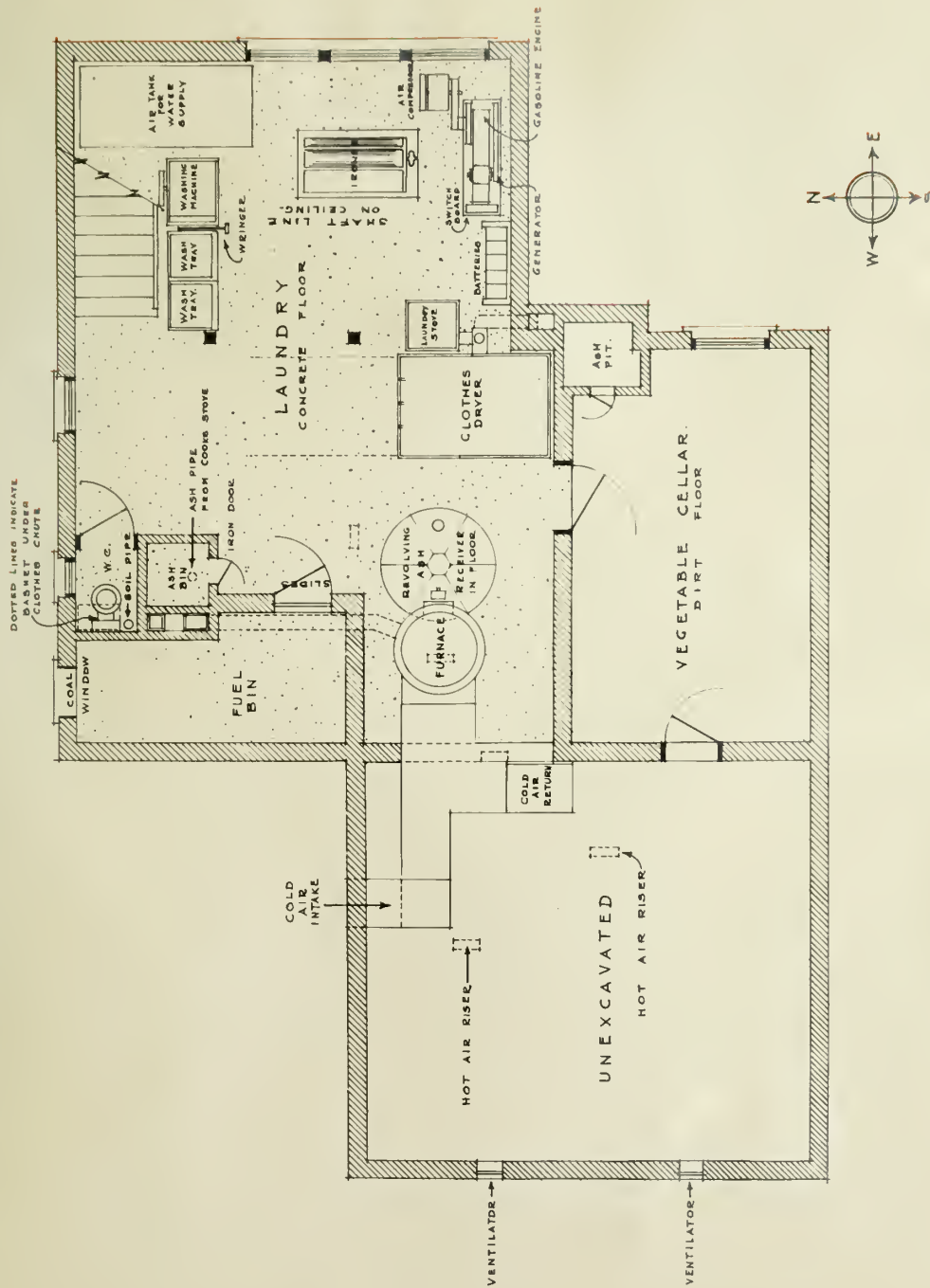
Plan No. 12.



Plan No. 13.

SECOND FLOOR PLAN.
FARM HOUSE.

BASEMENT FLOOR PLAN OF FARM HOUSE





Protection from Cold.

Fortunately, many of the provisions for excluding heat from the house in summer, help also to retain it within the house in winter. This is true of the orientation of the house, the placing on the west and north of clothes closets, storerooms, stairways and kitchen; the use of trees for a windbreak on the west and north; the use of window shutters and of insulated walls.

Windbreaks-- In addition to trees, (See Plan No. 1, page 17) the house may, on some farms, be protected from the cold blasts of winter by hills; and on nearly all farms, the barns may be to the north and northwest of the house, not only as a windbreak in winter, but that their odors may blow away from the house in summer. (See Perspective No. 9 for Plans 7 and 8)

Storm Sash-- In colder climates, the use of extra storm sash on the north and west sides of the house is a great protection against the loss of heat through the windows. It is roughly estimated by heating experts that ten times more heat is lost through a closed window without storm sash or double glazing than through the same amount of wall surface.

Reduced Window Area-- Contrary to the requirements of lighting and ventilation, protection from the cold requires less window area. It is, therefore, better to have fewer windows on the north and west, except in work rooms, like the kitchen, where an abundance of light is required. Because of the softness and uniformity of north light, it is the easiest on the eyes and the best for close work. (See Plans Nos. 4 and 12, pages 56 and 64.)

One of the simplest and most inexpensive methods of excluding the cold, the excessive cost of fuel, rheumatism and pneumonia from many farmhouses is that of making a tight foundation wall. The lack of such provision is clearly shown

in Print No. 36 which is reproduced from a photograph of a tenant house on a valuable farm in Illinois. Surface water stands in pools about this house until



Print No. 36.

evaporated by the sun or the wind, and the cold blasts of winter whistle beneath it. A single floor of $\frac{5}{4}$ -inch boards and possibly a rag carpet protect the mother and the children from a temperature that often runs many degrees below zero. A tent would be warmer. A 10-inch board about the building and two days' work of a man and team in grading up to it, would give good drainage to the lot, and save enough in one season in the cost of fuel to more than pay for the work.

HEATING SYSTEMS.

Of the modern improvements in farmhouses, none seems of greater interest to farmers than the heating systems. They are labor savers and a comfort to the men as well as to the women; but their installation in this class of dwellings offers no special problems.

The question about heating most often asked by farmers is, which of the three systems, hot air, hot water, or steam, is the best? The answer given by the writer is, that considering cost, hot air is the most desirable for houses of less than eight rooms, and hot water is the best for larger houses.

In considering the question of heating for new farmhouses, the cost of the stoves and the extra space they require, and the cost also of extra chimneys should be taken into account. The greater space which a furnace, with its large hot air pipes, may require in a basement, should also be considered in comparing its cost with other systems; but, as stated, these problems are not special to the farmhouse and do not belong properly to this paper.

Protection from Rain, Hail and Snow.

As a protection against rain, hail and snow, the roof is of prime consideration. It may be of shingles made of wood, metal, burnt clay, asbestos, cement, asphalt, slate and various compositions; of clay tiles, of special roofing boards and battens, corrugated iron, galvanized iron, tinned iron and copper, a composition roof of several layers of tar paper laid in melted pitch and covered with gravel in pitch or asphalt; and an innumerable number of prepared roofings put up in rolls.

Whatever the covering may be, its effectiveness as a roofing material will depend as much upon skilled workmanship as upon the material itself, and experience teaches that the roof covering leaks, flaps in the wind, or blows away more because of carelessness in applying it than for inherent defects in the materials.

Wide cornices (with ample gutters), window shutters and insulated walls, though effective in excluding heat from the house, are, perhaps, more valuable in excluding dampness.

Drop canvas curtains afford the most inexpensive protection to screened sleeping porches (see Print No. 37) and, when furnished with automobile buttons



Print No. 37

for the ends and a 2-inch pole for the bottom, they are quite efficient for all weather conditions. The porch as shown above is open on three sides, except for the screens, the canvas drop curtains and the honeysuckle vines. It is in northern Oklahoma, where the winds are often strong, the heat intense and the cold severe. It is the sleeping place of the family and three babies have slept there through as many winters.

Damp-proof Courses-- Dampness from foundation walls is often a greater source of trouble in brick and stone houses than from the walls above, and it is quite necessary to intercept this ground dampness with an effective damp-proof course of waterproof material. The little brick tenant house in Print No. 38 is an excellent example of a lack of such provision against dampness and the sickness prevalent within is most certainly the result of mouldy walls and a musty atmosphere.



Print No. 38.

Dry Cellars-- How to secure dry cellars is a question that has perplexed many a farmer, and one on which he has secured but little satisfactory information. Grading about the house to turn the surface water away and the proper care of roof water is all that is necessary on many building sites; but quite insufficient on others. A porous tile on the outside of the walls at the

bottom of the excavation and porous material above it, through which the ground water will be conducted to the tile, will suffice on many building sites; but on some others it is necessary to waterproof both walls and cellar floor to exclude ground water, and the methods for doing this are expensive.

Protection against Lightning and Fire

(See Destruction of Buildings by Lightning and Fire, Page 38.)

Protection Against Outside Foes.

The farmhouse is no longer a fortress against marauding bands of Indians and robbers and its doors are often open throughout the night. There are, however, foes yet to be contended with and none was ever more bloodthirsty than the mosquito or more persistent than the housefly. The dangerous bite of one and the filthiness of the other are now quite generally understood, and the house should be guarded against them.

The fewer the openings to be screened, the better the house can be protected. The screening of a porch will obviate the necessity of screening all the doors and windows opening upon it, and will add to the convenience in using those openings. It will add to the effectiveness of the screens and to the usefulness of the porches. Meat and butter put on the screened kitchen porch to cool at night will be safe against cats and dogs. The door which locks the porch at night secures also the inclosed doors and windows. (See Plan No. 1, page 17, and Print No. 39)



Print No. 39.

Provisions for Sanitation.

The house and the outbuildings should be located with due regard to healthfulness. Sanitation obtains only under conditions of good surface and subsurface drainage away from the house and the barns; good water, plenty of light, sunshine and uncontaminated air; cleanliness, and efficient protection from the weather and from filthy and disease-laden insects.

Considered then from this point of view, a house should be so planned as to eliminate all dark corners, nooks and crevices, and to flood every room with fresh air and sunshine. It should have a plumbing system and such other devices as will promote cleanliness. It should protect its inmates from the weather and from insects, and promote healthful sleep.

Simple Details an Aid to Cleanliness- Rooms can more easily be kept clean if simple in plan and finish. Woodwork should be simple, but not severely plain in all rooms. Simple mouldings may be used to advantage in rounding out corners and closing cracks, and thus become an aid to cleanliness. A quarter-round on top of a simple baseboard may be fitted tight to an uneven wall, and thus avoid a crack behind the base and a dust shelf upon it. "Sanitary doors" (without panels) and furniture similarly constructed are too expensive for the average dwelling, as are also the better methods of joinery, which the absence of all mouldings requires.

As a further aid to cleanliness, the amount of wall surface, ceilings and floors may be reduced, and the surface made as nearly smooth and non-absorbent as possible. A small and well-arranged room may have more usable space in it than a larger one poorly arranged, and an $8\frac{1}{2}$ or 9-foot ceiling may, in every respect, be better than a higher one.. Every hall requires extra surface in walls, floors and ceilings and more angles and corners. These are not only more expensive to build but also to clean. For a similar reason, and for the better

ventilation of clothing, it may reasonably be urged that the small and unventilated clothes closets be omitted, and that clothing be hung on the walls of the room.

Light and Ventilation- Windows should be most numerous on the east and south for the morning sunshine and the prevailing summer breezes. (See Plan No. 4) They should, however, be on all sides of the house for cross ventilation and so arranged as to give the best possible circulation of air within the rooms. (See Plan No. 5)

Rooms exposed on one side only should have open doors, fire grates or vent flues on the other. (See Plan No. 11) They are easier to heat, but harder to light and ventilate than corner rooms.

High windows throw the light and sunshine further across the room than low ones. Casement sash of half the size of double hung sash, if placed high, will light the room about as well as the longer window and will give an equal opening for ventilation. Where wall space is desirable for fixtures of furniture, as in a bath room, kitchen and laundry, and where light and ventilation are more important than an outlook from a rocking chair, the casement window is to be preferred.

The value of a fireplace for ventilation may justify its expense. This is particularly true if in the end of the room, where no other means for the circulation of air is provided.

The hot air furnace provides another excellent means of ventilation if properly installed and operated. Theoretically, the cold air is to be taken from a point without the building where it is least liable to be contaminated; then heated by the furnace and distributed through the air-tight pipes to the various rooms. Practically, the air is more often circulated within the building and reheated; because of the less fuel required. This is justifiable economy in houses that leak considerable air, or that have but few inmates, provided that the return is from a hall or entrance vestibule where the air is least foul. It is

very bad when, as found in an Illinois farmhouse, the air is taken in from an unclean basement.

The hot air entering a room displaces an equal amount which must escape through doors, windows, vent flues or walls and without other satisfactory means of escape, vent flues should be provided.

Indirect systems of steam and hot water heating provide also for an influx of fresh and heated air; but these systems of ventilation are too expensive for general use in farmhouses.

Out-of-door Sleeping- The screened sleeping porch is now popularly recognized for its sanitary value, as well also, for the greater comfort it affords for sleeping. The speculative builder has learned that the sleeping porch helps to sell his houses and he now seldom omits it. Entire blocks of new houses with screened sleeping porches may now be found in the cities, but seldom is such a porch found in the country. It is one of the important needs of the farmhouse. (See Print No. 40.)



Print No. 40

An ounce of prevention is worth a pound of cure and inexpensive provisions for sanitary sleeping rooms and porches may be worth many times the cost of the house. Scientific investigators claim that the lack of sunshine and ventilation in houses is primarily responsible for many human ills and particularly so for tuberculosis.

Sleeping out-of-doors is commonly prescribed for consumptives and highly recommended by all persons who have formed the habit as a most healthful and

enjoyable practice. The year-old baby, if well covered, may enjoy a nap on the porch in zero weather, and others may profitably sleep there through winter and summer if protected against strong winds and rain by drop canvas curtains.

Plumbing- The plumbing system of a house may become a blessing or a curse, according as it is or is not of good material and workmanship and well taken care of. Better by far, have no such system in a farmhouse than to have the cheapest. Like the smoke flue, it should not be an object of economy in first cost. A cheap chimney may jeopardize the safety of the house; but a cheap plumbing system will become a nuisance and jeopardize the health of the family. Farmers are being told that they can put in their own plumbing as good as any one, and thus save exorbitant plumbing fees. A word of caution is, therefore, advisable.

In a Southern Illinois town without a sewer system or a plumber, a sink, a bath tub and a lavatory were put into a house by a blacksmith who was quite able to cut and thread pipe, but knew nothing of the principles of plumbing. Within a few months two members of the family were near the point of death and others were more or less afflicted. The evidence in the case pointed so unmistakable to the improperly trapped and vented plumbing system that two of the fixtures were removed and the pipes sealed. Since then improvements in pipe fittings and plumbing fixtures have obviated to some extent the mechanical skill formerly required to make sanitary and durable connections, and the novice in plumbing may find very reliable guides for the installation of such a system; but there are yet such grave chances for imperiling the health of the family by faulty workmanship and of rendering the system inefficient and costly to maintain, that it is not to be recommended that the inexperienced undertake such a task.

Fly Screens- Though the house may otherwise be scrupulously neat and clean, it will be filthy if filled with house flies bred in the manure pits of the barn and in the carrion of animals. It will be insanitary if disease-laden mosquitoes may enter it at night and leave their poisonous stings in the helpless babe.

Provision for Convenience.

It is in the planning of the farm dwelling for convenience that the architect encounters problems differing materially from the requirements for suburban houses, particularly so for that class of homes in which servants are employed.

The Kitchen in the Suburban Home- In the latter class of homes, the kitchen and other service rooms are of secondary importance. They are, in many homes, a sort of necessary evil, to be mitigated as much as possible by obscuring them from the senses of sight, smell and hearing. To this end they are to be removed as far as practicable from other rooms and to the rear of the house where they may be reached only by a service walk and through an inconspicuous entrance.

Family Life in the Suburban Home- The man of this suburban house may leave it each morning for his business, many blocks away, and he may not return to it until his day's work is done. The wife goes shopping, or calling, or if at home, may spend the afternoon entertaining. All of the family may be away from home during the hottest months of the year.

Family Life in the Farm Home- On the farm, the family is seldom away from home and the men are often in and out-of-doors during the day. All members of the family and the hired help have their three "square" meals each day, two of which are often partaken of while the sun is below the horizon. During harvest, and at other times of the year when extra help is needed, the dining-room must accommodate several times the usual number to be fed and the kitchen also must needs be equal to the greater demand.

The Farmhouse a Workshop- All members of the family are farmers and workers, and the house is a part of the industrial equipment. It is the workshop for the women from dawn until dusk. The kitchen is the center of their activities.

The Kitchen More Important in the Farmhouse- Under the present conditions of the farm home, the women have practically no time for receiving social callers and entertaining during the day, and the relative importance of rooms in the house is reversed to that in the suburban dwelling just mentioned. Even though help may be employed for housework, it is to assist the farm wife and not to serve her. Convenience is, therefore, one of the most important requirements of the farmhouse and the possibilities of its attainment is yet to be commonly understood and realized.

Household Duties- Convenience in the arrangement and equipment of a house may be considered under the divisions of duties appertaining to meals, clothing, to care of the house, and to care of the person.

Meals- For convenience in the preparation and serving of meals and the rearrangement of the equipment after the meals, the fuel and water, foodstuff and equipment should be as nearby as possible to the places where needed.

Fuel- The woman living in the Pennsylvania house pictured below, said she



Print No. 41.

had broken down under the burden of her housework. She explained then that the dining-room is not adjacent to the kitchen. Upon being questioned about the fuel and water, she stated that she had for years been carrying coal from the barn. This is not one of the unusual and extreme cases. It is similar to many a farm woman's experience. In this Wisconsin farmhouse, Print No. 42, coal for all stoves is carried from a deep basement up a steep, winding stairway 12 feet high.



Print No. 42.

The man of the first house admitted that there was no reason why a coal bunker could not be provided near the cook stove and filled directly from the wagon; but no one had thought of it. The man of the second house accepted the suggestion for such an arrangement as a revelation and he and his wife began immediately to consider how they could yet accomplish it.

In the connected farmsteads of New England and New York, fuel is stored in a shed adjoining the kitchen, as shown in Print No. 42 of the farmhouse near Albany, New York.



Print No. 43.

The cord wood in Print No. 44 was being cut when photographed, to store in the building shown in Print No. 45. This house is near Saco, Me., and is now occupied by two families.



Print No. 44



Print No. 45

In Plan No. 12, provision is made for the storing of a wagonload of fuel either in a bin over the basement stairway or near the kitchen, as shown in the "Alternate" drawing. In plan No. 7 and in the "Alternate" of plan No. 5, the coal bin is in the laundry a few steps from the kitchen. It is convenient to use fuel from these bins, either for the laundry or the kitchen stove. In plans No. 4, 5, (not the "Alternate") and 10, fuel boxes are provided under the work tables near the stoves. These may be filled from the outside and emptied from the inside.

A further reduction in the labor of handling fuel will result from the use of gas and electricity for cooking. A Wisconsin farm woman (Mrs. F.F. Showers, in Bulletin 591, University of Wisconsin) states in a paper read before the Wisconsin Country Life Conference, In January, 1913, that "the gas range needs but the lighted match and the drudgery of carrying in wood, lighting and keeping up the fire, and carrying out ashes is done away with. Our gas bill, from July 3, 1911, to July 3, 1912, was \$52.00 or \$1.00 a week for all cooking, baking and lighting of the house and barn." Compare this with the time expended in getting up wood for the kitchen stove or the cost of coal.

Many farmers may now have electric current direct from trolley lines, or generated by a gasoline engine and a dynamo. Electricity for cooking will become more generally used as cookers are improved. Present open-air devices are very inefficient and more expensive in use than gas, wood, and coal stoves.

An electric heater in a fireless cooker would seem to be efficient and inexpensive to operate under thermostatic control. Such a device is now upon the

market. In addition to the thermostat, the current is regulated also by clock work. Such a stove may not suffice for all cooking; but in conjunction with a gas range, the two would eliminate all of the work of handling fuel and ashes and much of the other work and discomfort that is unavoidable with wood and coal ranges.

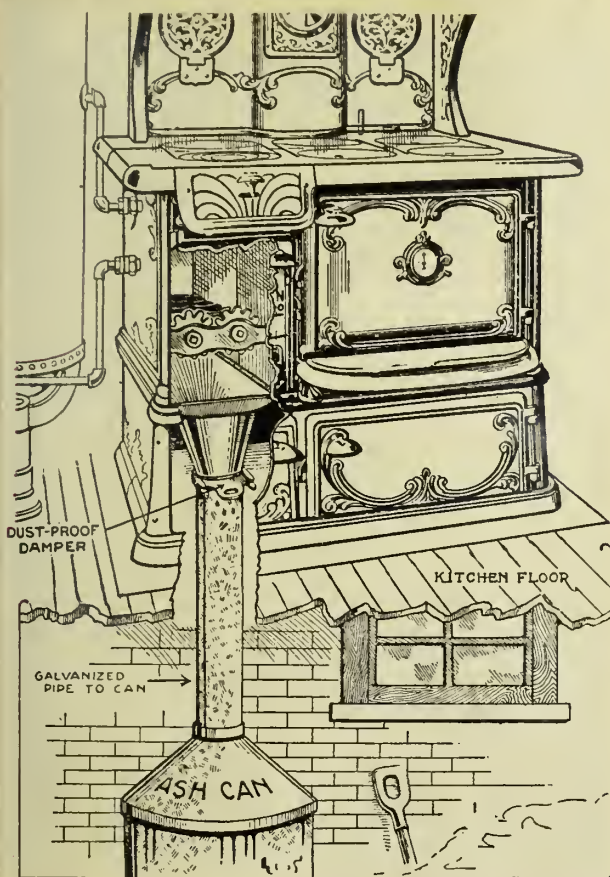
Ashes- The automatic removal of ashes from cook-stoves is provided for in plans Nos. 4, 5, 6, 7, 10, 12, and 14, by providing masonry ash-bins with concrete floor-slab covers, under the kitchen stoves. The ashes fall from the fire-box of the stove through a pipe as shown in Print No. 46. In an old house without such a bin, or in a new one, a dust-proof ash can may be provided as shown in the print. The can may be large enough to hold two or three weeks' supply of ashes, and the masonry bin large enough for a year's supply, or more. The masonry bin may be built up from the cellar floor as in plans Nos. 5, 6, 7, 12, and 14 and emptied through an iron door at the floor level, or it may be built from

the ground up, as in plan No. 4, and emptied through an iron door in the foundation wall, when no cellar is provided.

Water- The pneumatic water supply systems are very satisfactory substitutes to the farmer for the central pumping stations of cities. They make possible a complete system of running water in all the buildings of the farmstead and fire hydrants in the yard. With such a system and the use of a water motor, hard and soft water, cold and hot, may be supplied to the plumbing fixtures as needed.

Such systems are impracticable for the small and inexpensive farmhouses such as the larger number of farmers can afford, and it is a problem of considerable importance to devise more inexpensive methods for providing water in the house.

In plan No. 4, the cistern is under the house enough to admit of the pump being placed on the porch, and out from under it enough to admit of an outside manhole in the center of the cistern arch. This arrangement is as



Print No. 46.

inexpensive, if not more so, than locating the cistern some distance from the house and it brings the source of water supply very near to the place in the house where the water is most needed.

A pitcher pump and a kitchen sink with its waste pipe and sewer, make up about the simplest plumbing system for the kitchen. The pump at the sink is not so much needed in a house with another pump so near as in plan No. 4, but it is invaluable for conveying water to the kitchen from a more distant source of water supply. The reservoir at the back of the cook-stove is the simplest provision for storing hot water. A step in advance of these simple provisions, leads us to a consideration of a real plumbing system which is not intended here.

Storage- For convenience in the preparation of meals it is necessary that the foodstuffs be as near as possible to the kitchen and to the particular places in the kitchen where they are to be prepared. The kitchen in plan No. 12 are divided into four distinct parts: one for cooking and the storage of stove utensils; one for pastry work and the storage of flour, meal, spices, etc.; one for dish washing and the storage of dishes, and one for the storage of kitchen fuel. The cases near the stove are six feet long, and the china closet opening to the dining-room may be extended over the sink to twice the length shown. For all storage in the kitchen of foodstuffs, dishes and stove utensils, this amount of shelf room appears ample and more conveniently placed than in separate pantries.

The smaller kitchens in plans 4, 5, 6, and 7 have less storage room, and in No. 4 it is quite insufficient for food supplies kept in quantities. Additional shelving should be placed over the sink.

Plan No. 5 provides more shelf room in the kitchen than No. 4, and in a more convenient arrangement. Shelves are omitted over the sink to avoid a confusion of lines on the drawing.

The "Alternate" in this plan provides space for a refrigerator; notwithstanding that but few farmers living in houses of this size have this convenience. They cool their food in the cellar and in buckets hung in cisterns and wells. The refrigerator is provided for in plan No. 12 near to both kitchen and dining-room from which it is to be used, and near to an outside entrance from which it is to be filled. It is removed from the direct heat of fires and of the sun. Many farmers put up ice and there is need of floor space for a refrigerator in a plan as large as No. 12.

Dishes to be used in both kitchen and dining-room are more easily handled if placed near to both. The relation of the two rooms is of first consideration in planning the kitchen. The logical place for the china closet is in the partition between the two rooms, when no pantry intervenes. (See plans Nos. 5, 6, 7, 10 and 12.)

As an aid to economizing space and steps in the servantless farmhouse, the pantry between kitchen and dining-room may advantageously be omitted. There being no butler, there is no need of a butler's pantry. Such a storage room is better opening off the kitchen, as in plans Nos. 10 and 12.

The butler's pantry has the advantage of insulating the dining-room against the noise and heat of the kitchen, and it is very desirable in the South in houses having servants. In others, the noise and the odors of the kitchen are not very objectionable, and but little heat is transmitted to the dining-room if the kitchen is well ventilated, and so located with respect to the prevailing winds that the heat and odors blow away from the house.

No china closet has been provided in plan No. 4, but the cupboard is conveniently placed with respect to dining-room, sink and stove.

In the other plans, Nos. 5, 6, 7, 10, and 12, the china closet and the cupboards below the table open to both rooms. The china closet doors extend down to the table-top only on the dining-room side, and when opened, the table is as accessible from both rooms as if no partition intervened.

With this arrangement, the dishes may quickly be transferred from the dining-table to the china closet table with as few steps as if both were in one room. The china closet doors will then close the soiled dishes from view. The dining-room is thus quickly cleared. If it is a part of the living room, as it is in all of the plans in this paper, the table may be in readiness for another use within a few minutes after the diners leave it.

The ideal relation of sink to china closet is such that the dish washer may reach the soiled dishes upon the china-closet table; wash, drain and dry them and put them back into the china closet without having^{to} move~~d~~ from her position

before the sink. Such an arrangement obtains in plan No. 10. It is very nearly obtained in plan No. 12; but in the others, a few steps are necessary. In all of these, it is possible to reach both drain board and shelves from one position.

Dishes and such utensils as are used most at the sink should be put upon shelves, hung on hooks, or placed in racks above or near to the sink, when there is blank wall space for them.

The sink should be as near to the stove and to the work table as may be practicable for the use of the three fixtures by two or more workers.

A dining porch is much to be desired and, when provided, it should be convenient for the kitchen service. The porches in plans Nos. 4, 6, 7, 10 and 12 have been so arranged. Double doors have been provided in No. 12 so that the dining table may be moved on its castors to and from the porch. With such a porch as this, there is no excuse for a separate dining-room in the small and inexpensive farmhouse, and of the two, the screened porch is much to be preferred.

Convenience in Duties Appertaining to Clothing- The sewing room is, perhaps, more to be desired than the separate dining-room. The housewife sews between other duties and a room for this work enables her to drop her sewing at any moment and for any length of time without having to put it away and pick up the scraps. For the woman without servants, this room should be near the kitchen, as in plan No. 12. As here arranged it is convenient also as an office for the farmer. A family in New York State uses such a room for these two purposes and finds it a very satisfactory arrangement.

Notwithstanding the success of cooperative laundries in the country, provision is yet to be made for laundry work at home. Whether space for this work shall be provided on the ground floor or in the basement, is a question on which farm women give different answers. These answers, however, are, in most every instance, in accord with the present practice at home.

The washing, in a tenant house according to plan No. 4, would probably be done on the porch near the pump and the floor drain, except in winter when it would be done in the kitchen. In either place water, heat and drains are near. A combination wash tray and sink would be an added convenience.

In plan No. 7 and in the "Alternate" of No. 5, the laundries are conveniently arranged on the first floor with respect to the kitchen and other plumbing. They serve also as wash rooms for the men coming in to meals.

Plans Nos. 6, 10 and 12 provide for basement laundries. Though not quite so convenient in some respects, they are better in others. They occupy room that is not much needed for other purposes and thus render possible a smaller plan, or more rooms above. First-floor laundries may also interfere to some extent with lighting and ventilation. If provided with fixed laundry trays, the cost of piping may be in excess of what it would be in a basement plan. Clothes chutes are more often impracticable for a first-floor laundry.

Plan No. 14 is rather fully equipped to show the possibilities of utilizing space in the basement. It has a clothes chute from the bath room above, two laundry trays, a power washer, wringer and mangle, a laundry stove, clothes dryer, gasoline engine, dynamo, switch board, batteries, air compressor, pneumatic tank, furnace, two ash bins, one "ash receiver," a fuel bin, water closet and vegetable cellar; but only a part of the basement is excavated. This part is well lighted and ventilated and easily accessible from inside or outside of the house. For this plan the basement laundry appears the better.

For further convenience in handling clothing and bedding, there is need for hat and coat racks at the entrance most used. Such racks are the better for being

in the open than in a small closet. There is need for shelving in the sewing room, as in plan No. 12, and a closet for the general storage of bed clothing.

The average farmer has but one or two suits and little need of the most modern space-saving devices for storing them; but a pole for suit hangers, as in plan No. 12, may be used to advantage.

Built-in dressers are shown in plans Nos. 6, 7, and 8. These may be built in connection with wall beds, or wardrobes, or to fit an irregular plan of room, or the waste space under a low roof. Such built-in furniture may be more spacious, convenient and inexpensive. Being finished like the doors and windows, it is wholly suitable to the room.

A hinged window-seat, as provided in plans Nos. 7 and 10, serve the double purpose of seat and storage of clothing, and aids in the design of the room.

Convenience in House Cleaning- The house that is larger than needs be, will be less neat and clean than it should be, or a burden to the woman who cares for it. The possible saving in cost of building is not so great a reward for skilful planning as the saving in household labor.

The little house, according to plan No. 4, will be easy to sweep and clean. The two bed rooms and the living room may ^{be} swept toward the fireplace, and the dust dropped through the ash dump. Another such dust trap is provided in the kitchen floor over the ash bin, but this is a questionable convenience. The kitchen is easier to keep clean because of not being a thoroughfare to other rooms. This is true of all the plans, Nos. 4 to 14, and a desideratum for all dwellings.

The kitchen in plan No. 4 is so small that the concrete floor may better be extended over the whole of it, and covered with linoleum. This will further reduce the work of cleaning.

Plan No. 5 is larger and has more wall surface in proportion to its floor area, and more doors in proportion to the number of rooms than plan No. 4. It has a hall, though small, and inside steps to clean. Plan No. 7 has a stairway to the second floor in addition to the basement stairs, and thus the work of cleaning is considerably increased.

In plans Nos. 12 and 13, the stair starts from the living room. A hall from the front door to the kitchen would give more privacy to the stairway and to the living and dining rooms. It would protect the latter from the dirt of travel to and from the upper floor and from dirt swept down the stairway. It would, however, necessitate an increase in the size of the house and of its cost, hence the arrangement shown.

Of the pros and cons for one and two-story houses, the energy and time required in cleaning and climbing stairs and the money to be expended in building them, furnish the strongest arguments against an upper floor. Increased roof and ground areas and foundation walls are the principal economic arguments against the one-story plan. It will be an interesting problem to determine the floor areas for which the cost of the one-story house balances the cost of the two-story house; but it would be a very difficult problem to determine the balancing point of convenience in two such plans. Mathematical deductions are not necessary, however, for the conclusion that the one-story farmhouse of six or eight rooms, and less is more easily cleaned and kept in order, than the two-story house.

As a further aid to house cleaning, the dining-room should be directly accessible from an outside entrance or a wash room. This has been provided for in all of the plans from No. 4 to 12. It may be regarded as a requirement peculiar to the farmhouse; but it is an advantage also in other dwellings.

The architectural requirements for cleanliness in the house are requirements also for easy cleaning. (See page 74.)

Of the most improved mechanical aids to convenience in cleaning, none appears more valuable than the vacuum cleaner, but its present cost (see page 36) precludes its use in the inexpensive farmhouse.

Conveniences for Bodily Cleanliness- This term suggests at once the word "bath-tub," but the two are not synonymous. If they were, there would be a large number of dirty people in the cities as well as in the country. Bath tubs are a near, but not an actual necessity to bodily cleanliness, and the value of any effort to assist the farmer with the planning or the remodeling of his house will be greatly lessened by an uncompromising insistence upon such a convenience. A bath tub implies a complete plumbing system, and the latter is hardly practical without a heating system to prevent the bursting of pipes by freezing.

In plan No. 4, the kitchen may be used as a bath room at night. Plans Nos. 5, 6, and 8 provide for plumbing and heating systems and for small toilet rooms over the stairs. A tub is shown in the "Alternate" of plan No. 5, which has no basement steps. The shower room may be lined with zinc and closed by a rubber curtain. It is more inexpensive than a bath tub and a very good substitute for it.

The laundry may be equipped with a shower head over a floor drain. Even a water hose is a desirable contrivance for bathing in summer, if a suitable room is provided for its use.

A "wash sink" is shown on the kitchen porch of plan No. 10, and in the wash room of plan No. 12. This is considered better for farmhouses than the lavatory because the men will prefer washing from the open bibb or from a pan to be emptied into the sink. Such a fixture will not be practical in winter on an open porch; but it may be on a glazed porch. For the simultaneous accommodation of three or more men, the sink should be longer than shown. A wooden wash sink or trough was found in a Wisconsin farmhouse. It is about four feet long. Wash pans are filled from a bucket placed in the sink while being used and then emptied into it. The waste water flows out on the ground.

PROVISION FOR SOCIAL LIFE IN THE HOME.

The house that is no more than a workshop is not a home. An observer of country life, in describing a particular instance of this kind, stated:

"Father and mother toiled and slept, and the children attended a nearby school with equally unattractive surroundings, a few months each year. The rest of the time they toiled and slept like father and mother..... This home was not in any sense a social center and the brightest spot in the perspective for the broken wife and mother was the nearby graveyard on a hill between this home and the village post office. This farmer was well off in this world's goods, viewed from a dollar-and-cents' standpoint, but miserably poverty stricken in those things that make life worth the living."

The inexpensive farmhouse may necessarily be reduced to the essentials for bodily comfort and decency; but it may have all the advantages of good location, orientation, pleasing surroundings, etc., of more costly houses, and such comforts as may obtain from careful planning and design.

Plan 4 provides for no parlor, den, or billard room. It is reduced to the smallest dimensions and to the most inexpensive construction consistent with the convenience and comfort of a small family; but it has the essentials of a house for a happy home. The living room, with triple windows on the south and two on the north, a screened porch on the east and an alcove bedroom on the west, is as pleasant a room as a \$5,000 house can afford and, with a glowing fire on the hearth, it may be as comfortable and as cheerful in winter as a steam-heated mansion.

The Lawn- Country people are fortunate for their out-of-door opportunities, and a carpet of green under the shade of trees is more to be desired than a Persian rug in a city apartment.

Parlor- A parlor occupies the first-floor front room of the new six-room house shown in Print No. 46.



Print No. 11.

The writer engaged in the following dialogue with the farm wife:

"Do you use this room often?"

"No."

"Once a week?"

"No."

"Once a month?"

"No, I think not."

"Is it much more than a storeroom for parlor furniture?"

"No," she replied, "but it is a custom here to have parlors, so we have one."

There were probably other reasons for the parlor than she herself had thought of. She had two little girls who would some day want a room that they could keep nicer than the others. It would always be in order and better for receiving their young friends than the kitchen, which the ^{family} used as a general living room. It is better, too, for a music room. The girls can close themselves up in it while practising.

The parlor should have a place in the farmhouse; but not, as in this one, to the exclusion of everyday comforts and social advantages. The cost of this room would probably have paid for both plumbing and heating systems, which the farm wife said they can not yet afford. The parlor and the stairway occupy the front of the house. It will be observed that the morning sun can not enter either this room or the one above it. Neither can the afternoon sun, and the porch excludes it from the parlor at midday. Though most fortunately located for sunshine, summer breezes and a pleasing outlook up and down the highway, it practically excludes all, for the family lives, until bedtime, in the northwest corner of the house, behind the parlor.

Porch- Compare the narrow, open porch of this house with the one in plan No. 4. A number of people trying to sit upon it would necessarily align themselves like sparrows on a telephone wire. They would prefer sitting on the ground in the shade of the house, where they could face each other.

Front Door- Observe, too, that there are no steps to this porch, notwithstanding the front door which is seldom, if ever, opened. The kitchen door on the north side of the house is the only one used. Herein is another requirement peculiar to the farmhouse. The front door is a questionable convenience. It is so in plans Nos. 7 and 12. The women work most of the day in and about the kitchen, and one might knock day and night at the front doors of some large farmhouses without being heard or seen. The yard drive is often alongside the house, as in plans Nos. 4 and 12, and the entrance should be near this drive and the kitchen. This explains the one entrance to the smallest plan shown here.

CHAPTER 111. BEAUTY

New Farmhouses Poorly Designed.

The farmhouse should be well designed. It should be beautiful. However, very few new houses have this attribute. The writer expected in advance of his investigations to find a number of good houses of exemplary plan and design; but he was disappointed. He found among the old colonial farmhouses of New England, New York, and Pennsylvania many excellent examples of design, and he expects to find other good examples of the Georgian colonial in the South, but these houses are now out-of-date in plan and equipment.

Examples of Farmhouse Designs.

Print No. 46, page 86, is a photograph of a new Pennsylvania farmhouse built among fine examples of old colonial architecture. Its only element of beauty is its plainness. Prints Nos. 9 and 10, page 12, bear further evidence to the lack of good design in both large and small farmhouses. No. 9 is in Wisconsin and No. 10 in Oklahoma. Prints No. 18, page 20, and No. 35, page 52, are of a Louisiana farmhouse built by a Canadian woman. It is the only new house found by the writer in his investigations in twenty states that gave evidence of architectural ability and, with the exception of the old colonial houses previously mentioned, it is the only one of any age that seemed to be designed by an architect.

The Possibilities of Farmhouse Designs

The possibilities of rural architecture are not, however, wholly within the imagination. They are in evidence today in a number of country houses of city folk who, fleeing from the congested and noisy streets, have built new homes as far out into the country as rapid transit has made it possible for them to go. Such houses have been designed by architects who have regarded so well the open country, the sunshine, and the prevailing breezes, that they have in reality given to us again a rural architecture. These houses differ from farmhouses only in so much as the industrial and social activities of the suburbanites differ from those of the farmers. These activities affect the plan more than the exterior design, so the latter is quite similar to what we might expect for better farmhouses. (See Frontispiece.)

Principles of Design

Rural architecture embodies no new principles of design. The same requirements for size, harmony, proportion, symmetry, ornament, and colour obtain on the farm as elsewhere; but the conditions affecting their application there differ greatly from the conditions affecting urban dwellings. Nowhere would they be more favorable for good design, if architects could be employed for this class of work.

The farmhouse should, perhaps, be most differentiated in design from suburban houses by having its four sides treated as of more nearly equal importance. The rear of the house is used more and seen more by the family than the front.

The more careful attention of public institutions and of architects to the farmhouse may in time result in the development of distinctive farmhouse styles. It is not improbable that the roofs of such buildings, especially in the hot and dry climates, will become so generally used as to result in a type of house new to this country, and of a design quite as distinct as the new "Style of the Western Plains."

Existing styles for country and suburban houses will, however, continue to be used in the localities for which they are best adapted. The four kinds of Colonial will hold their own in level countries for plans admitting of a symmetrical treatment. Of the four types, the Dutch Colonial is best suited to the small house, and it is becoming popular again not only in the East, but in the North and the Northwest. The "Northern Tradition," with its low sloping roofs, heavy porch columns and long dormers, is particularly suitable for the northern states and for a more rugged topography than the Colonial. The Swiss chalet is suitable only for mountainous regions, but it is an excellent type for a farmhouse with such surroundings. The Spanish Mission has never been surpassed for hot climates, and the lower price and increasing use of cement favors its greater popularity. The new "Style of the Western Plains" developed by Chicago architects, is coming more and more into popular favor, and it has spread beyond the boundaries of the prairies. It is for the two-story house what the bungalow is for the one-story and it is especially well adapted to farmhouses in level regions and hot climates. The bungalow is the favored style of farmers, notwithstanding that they seldom use it well. It is in disfavor with many architects, but its unsurpassed popularity proves a particular worth that no other style possesses.







UNIVERSITY OF ILLINOIS-URBANA



3 0112 079827660